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Hollington House, Berks.....Mr. A. C. Blomfield, F.R.I.B.A., Architect.
Gallery and Ballroom.....Messrs. Clark and Moscrop, Architects.
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Some Considerations on the Reform of the Easement of Light.

As many of our readers know, a Committee of the Institute for a long time considered the question of a reform of the easement of light, and issued a Report on the subject, which formed the basis of the Bill introduced last session. Whether or not a similar Bill or one differing from the Bill of last session be again introduced this year is a matter of no importance, for, having regard to the political situation, it certainly cannot, apart from its merits, be passed into law. It appears, however, to be important that the question of the easement of light should be considered from some points of view which are apt to be neglected. It is often said, and with a great deal of truth, that the present power of the owner of the dominant tenement is arbitrary, hard on owners of servient tenements, and has a tendency to prevent the erection of desirable buildings. But it seems to be forgotten that this state of the law leading to these results was deliberately brought into force by the Legislature and by the action of Lord Grey's Government in 1834, and that this state of the law has existed for the best part of a century, whilst from a still earlier time than 1834 the same principles as now flourish were in a limited state of existence. Thus there have grown up an immense number of valuable rights, and we all know from the licensing question how hardly fought for are rights of even a much more precarious kind.

Again, not only do these rights exist, but there also exists a generally accruing right of property in ancient lights. In an old and conservative country such as England the alteration or the diminution of such rights is one of the most difficult things to undertake and to carry through. Such an undertaking can never be successful in any other hands than those of the Government of the day, and the Government of the day, the moment it brings in a measure to benefit one set of proprietors, must be prepared to encounter the hostility of another set. These remarks may seem somewhat in the nature of truisms, but unless they are properly appreciated the difficulty of reforms and changes in the law of light cannot be understood. Many improvements are theoretically desirable and are easy of achievement on paper, but prejudices and hostile interests crop up and are powerful the moment such changes are brought forward in actual life. It is equally useless to point to the example of the United States or of any other country. Details of our constitution, innumerable matters in the social life of the people, differ from those of other countries, but that fact does not give any impetus towards their change. It appears, therefore, to be clear that reforms in the easement of light cannot be successful unless based on the broad ground of public interest, or unless they are introduced to remedy a clear and undoubted injustice. It is on this latter ground that we have insisted over and over again that the chief reform required is some modification of that part of the law of light which touches the vindication of the right, and which refers to the question of damages and injunctions.

Here we have an example of actual injustice. Let us assume the propriety of the right of the owner of a dominant tenement to light; but the moment that right enables a man to get more than justice a resulting injustice to another man comes into being. If A, the owner of the dominant tenement, has a right infringed by the heightening of a servient building, which infringement can be properly compensated by damages, then when such right is used, either to prevent any raising at all of a servient building or to exact an unreasonable sum, this right leads to injustice. We get beyond the mere vindication of a right, and the latter becomes a positive means of doing wrong. If that state of things can be shown to result from the law of light as it is to-day, as it certainly can, then we have no doubt that sooner or later some modifications will be made in it. But the point to be arrived at is to demonstrate this state of things to the people generally and to the Legislature in particular, and we are convinced that the best way of attaining this object would be by the appointment of a Royal Commission to consider the law of light. The deliberations of the Institute have hitherto had no practical result, and they will not have until Parliament can be convinced by the result of an impartial investigation that changes in the law of light are urgent—urgent and not merely desirable.

We have referred to the fact that injustice must be shown as one ground of change; the general public welfare is another ground. It has to be noted

that the basis of the old customs of London and York which were abrogated by the Prescription Act of 1834 was the general welfare. By these customs an old servient building could be raised on the same foundations so as to obscure a dominant building's lights. And why? Because the increase of large, important, and roomy edifices was necessary for the well-being of London. The interests of the owner of the dominant tenement were regarded as secondary to those of the town as a whole. True, the fact that the servient owner was limited in his rights soon became irreconcilable with the progress of society, but nevertheless there was in existence the principle that the public benefit was above the interest of the private individual. So that what we have to look for at the present time are the points in connexion with the law of light and with its practical working where the public advantage requires a modification of the rights of the dominant owner, not for the benefit primarily of the servient owner, but of the community. Investigation by a thoroughly competent and impartial tribunal would, we think, show that such circumstances exist. For example, there may be two small and unimportant dwelling-houses near each other, one having ancient lights. Let us assume that the other is sold for the purpose of forming part of the ground for a large general shop, advantageous to the neighbourhood, necessary for its reasonable development. Can it be right that the owner of the small dominant tenement should be able to prevent the erection of a building required in the interests of the local community? If a railway had to be made right through the dominant building, the company, under its legislative powers, could demolish it on payment of reasonable compensation. The railway company is invested with these powers because it is for the public benefit that private rights should be put on one side in some circumstances. We are not now working this matter out in detail. We give this example only to illustrate a principle. No such power as we here indicate could be bestowed on a servient owner until the circumstances of each case had been investigated. But there are reasons for the belief that such circumstances may be found to exist, and that the present difficulties may in some instances be capable of solution by the application to rights of light of the principles and practice of compensation as in the case of statutory undertakings.

No greater mistake can, however, be made than to think that any change in the easement of light is easy, for the reason that any change will conflict with actual and with inchoate rights, which are prized and which have a certain pecuniary value. But the fact that the late Lord Cairns succeeded in passing a measure which modified the strictness of the law by allowing in some cases damages to be given instead of the issuing of injunctions shows that by tact, firmness, and knowledge further reforms are possible. But we have little doubt that for them it will be necessary to await the advent of a new administration and of a new Lord Chancellor anxious to make his mark on the municipal law of England.

FIRE PROTECTION FOR THEATRE STAGES.

ONE of the most beneficial resolutions of the outgoing London County Council was the adoption of its Theatre Committee's recommendations to compel theatre managers to use non-inflammable scenery, including thereby all wings, sky borders, cloths, draperies, gauzes, floral decorations, and properties. The resolution was to the effect that the premises licensed for public entertainments should only obtain their licence upon complying with these requirements, and the requirement distinctly states that the scenery shall be rendered and *maintained* "non-inflammable."

It may be recollected how strongly we have advocated this, only recently again in connexion with the lamentable catastrophe at Chicago. At last our great local authority has awoke to the fact, so long argued by our leading specialists, that to obtain fire protection one must, in the first instance, adopt fire-preventive measures, and that it is almost useless to legislate on questions of construction and fire-extinguishing apparatus to meet the occurrence of fire and panic until the possibility of this actual occurrence of fire and panic has been minimised.

In the case of all theatres—whether equipped with an old-fashioned or with a modern stage—the primary risk is nowadays to be found in the highly inflammable nature of the scenery and properties. Experience has long proved that the high inflammability of scenery is the one great source of danger, and, more, that this was the source of danger that could be more easily restricted than, for instance, the actual possible cause of an outbreak to be found, say, in the sparking or fusing of the electric light installation or some actor's neglect with a burning cigar or open light.

It is now to be hoped that the County Council will soon go one step further and compel theatre managers to substitute wire cables for the highly-inflammable rope, and compel all new theatres to have modern stages of metallic construction and hardwood stage floors, fly floors, and gridiron floors.

Turning to the question of the non-inflammability of scenery, we observe with some anxiety that the County Council has not defined the word "non-inflammable." If we bear in mind the various chemical solutions that are advertised in theatrical papers as making scenery fire-resisting, one must be dismayed at the idea of the possibility of a theatre manager being allowed to apply some of these at his own goodwill and discretion and in his own way, without having a minimum standard fixed as to what degree of "non-inflammability" is required and what constitutes "non-inflammability." On the Continent of Europe the non-inflammability of scenery had been ordered in certain localities as far back as 1882; but these foreign rules, however excellent on paper, fell in abeyance owing to the technical difficulty of rendering the scenery "non-inflammable" in such a manner that the "non-inflammability" was real, and that it was maintained in a practical manner for more than a nominal period. The wondrous solutions that were sold at the time were, to a considerable extent, preparations which, to all intents and purposes, ensnared the managers and the public officials into a feeling of safety, while the ordinary danger had, as a matter of fact, been scarcely, if at all, reduced.

Of all the various methods of treating the canvas of scenery—and we have studied them most carefully—we only know of two in the United States, one in South Germany, and one in Great Britain that meet practical requirements; whilst as far as the "non-inflammability" of wood is concerned, we only know of one method in Great Britain and one in the United States that are reliable, and these are both based on complete impregnation, followed by a process of slow and systematic artificial drying.

No one can be more averse than we are to the principle of legislation creating a kind of monopoly over some proprietary article, and yet it must be remembered that some of the great inventions of the world have necessarily resulted in such monopolies having been temporarily created, even for a period of some years. Take, for instance, the early monopoly of the incandescent electric light. But, nevertheless, we think that the County Council will have to define its term "inflammable" in such a way that a real safeguard may be assured, even if, as we hold, there is only one firm in the United Kingdom that can meet a logical specification, and that it will take at least a year or two for any other firm or firms to arrive at the same standard of proficiency in the execution of their work to compete against the existing firm, even in regard to that part of its process which we consider to be of common knowledge, *i.e.*, not subject to exclusive patent rights. The demand for "non-inflammable" processes will necessarily lead to the subject being taken up by many firms and by chemists, and competition will ensue, even if those first in the field get the start they deserve for their pioneer work.

But a specification, we think, we should have, and this specification is important, alike for the wood contained in the scenery, properties, and fittings as it is for the canvas employed. For wood it is essential that the impregnation should be absolute and thorough. Timber deemed "non-inflammable" should be impregnated to such an extent that any splinter or chip taken from the kernel or interior of any scantling used should show the same non-inflammability as that taken from the exterior. It is also important, to our minds, that the "non-inflammability" should be of the character known by chemists as "flame-proof," viz., that the wood should neither catch fire, sustain or spread fire or flame, and that at the very most the slight red dark glow should be permissible—viz., the glow of incandescence as distinct from flaming. To be a practical and commercial commodity, and to avoid the opposition of the ordinary stage carpenter, stage hand, and scenic painter, it is essential that the wood should take paint; that when complete and dry it should not corrode screws or nails; and that the chemicals in the impregnation should in

no way be of a poisonous character that might affect the throats of employees. These are all points that should be borne in mind.

Regarding the non-inflammability of canvas, here the treatment must preclude any thread of the canvas or any frayed edge of the canvas catching, sustaining, or spreading fire or flame. The canvas after treatment must take paint easily. The treated canvas must not corrode the tacks used for nailing it on or affect the thread used for stitching. The chemicals used, as before indicated, must not be of a poisonous character.

During the transitional stage it will, of course, be necessary to discriminate between existing scenery and new scenery. It will be practically impossible and economically unpractical to insist on all the wood framing of existing scenery being taken out and replaced by impregnated wood. Similarly the application of chemicals to existing scenery will have to be very carefully and systematically done, so as to avoid damaging the scenery. With new scenery it will, of course, be plain sailing, as impregnated wood (duly stamped or marked), and canvas that has been impregnated prior to being made up for scenery, should alone be permissible. For gauzes, draperies, hangings, etc., much care and experience will be necessary to avoid injury to the texture and to the colour. In our experience practically every colour and every texture requires a different treatment, and velvets and satins are particularly difficult to manipulate. Altogether, whilst congratulating the Council on its new rule, we foresee that administrative difficulties can only, in the first instance, be overcome by clearly defining what is "non-inflammable" for existing scenery and what is "non-inflammable" for new scenery, with sub-definitions as to the standards for new canvas and new timber.

We must now turn to the construction of the stage, its metallic supports, its modern mechanism, and its wire work, which replaces the rope work of old. America and the Continent have now been rapidly adopting such stages in all new theatres, and they have also been introducing them in some of their old ones. The reason for this is, mainly, a saving on the weekly labour sheets for stage hands and on the insurance premium against fire risk and economy in the repairs list; or, in other words, their economical advantages generally. With us these metallic stages are still very much the exception, and the Royal Opera House, Covent Garden, alone has a complete mechanical installation with electrically-driven bridges. Their introduction into the new playhouses has, however, now become a necessity as a safeguard for the public, and, as on the Continent, they should be made compulsory. We do not see the least disadvantage, financial or otherwise, in such compulsion to the management. In fact, it will soon be found that, as abroad, there is an economical advantage in their introduction.

One other point in connexion with the protection of the stage against fire. We refer to the apparatus to be applied when the fire has broken out. In the first instance, we have the fire-resisting curtain and the louvres over the stage. Regarding the former, after much consideration, we would in new theatres henceforth substitute the metallic fire-resisting curtain in place of the one now commonly in use and made of asbestos cloth, the quality of which material is at times very problematical. As to the louvres, they should open automatically with the closing of the fire-resisting curtain.

Next we have the extinguishing apparatus, and we hold that the automatic sprinkler has become an essential, no matter what safeguards are taken for the exclusion of combustible scenery and the combustible stage. It is, of course, to be hoped that the sprinkler will never have to come into action, owing to the non-inflammability of the stage and its equipment, but the sprinkler would certainly be a second line of defence. Given, in addition to this, the ordinary hydrant hand-pump and bucket equipment, the safeguards of the stage should be complete.

In conclusion, we may take the opportunity of pointing out to the provincial authorities the great advantage of immediate imitation, which will be the less difficult now, having regard to the fact that the London scenery which will henceforth be taken on tour to the provinces will be non-inflammable, and the local manager will thus be limited to simply making his local pantomime a non-inflammable production. Birmingham has been the first in the field in making "non-inflammable" scenery compulsory by a resolution of the magistrates, which was arrived at last week. But there are yet at least some fifty provincial authorities that should immediately follow suit.

OLD PEWTER.

THE Exhibition of Old Pewter at Clifford's Inn, which will remain open till the 26th of the present month, is one of peculiar interest in regard to the fact that it shows what can be done by design to give value to articles executed in a material not in itself rich or costly. The English public, with their love of gold and silver, their habit of estimating decorative work by its bullion value and not by its artistic merit, may, or might, find a wholesome lesson here, in the study of a collection of work which is full of artistic and picturesque interest, though executed in a material of little intrinsic value, a mere alloy of tin and lead.

Artists there are, no doubt, who will maintain that pewter is far superior metal to silver for artistic work; but that is an exaggeration born of a recent fashion for pewter collecting. A great deal of the work at Clifford's Inn would look still more attractive if executed in silver. In certain ways, however, pewter has qualities of its own for artistic work which are different from those of silver. The dulled surface lustre has its special effect, and also the heavier outline and proportion arising from the greater thickness in which the metal is used and its very ductile quality give a character, especially to large and boldly-modelled objects, which silver cannot so well bestow. We see this at Clifford's Inn in such examples as the massive "large flagon or measure" on the top of case B, with its wide double roll in the middle; an object which would look rather clumsy in silver, but which in pewter seems expressive of, even suggested by, the quality of the material.

Among objects which show the value merely of good form in a cheap material and with hardly any ornament, are some of the plain old English tavern pots and measures shown on the second shelf of dresser A. Nothing could be simpler than these, but they are all moulded into an outline which, in itself, gives them a certain style and distinction. So also in wall-case B the shapes of the various beakers exhibited, with their slight moulding at the base, and the upper portion spreading to the top in a delicate concave curve, are in themselves examples of style; the style which comes from perfect suitability of shape. Some of them show engraved ornament of a delicate type, and which in no way interferes with the outline; but without this they would still be pleasing and artistic objects.

Of the degree of refinement, however, with which so homely a material as pewter may be treated, there are remarkable examples in the collection, which show how a cheap material may be raised almost to the condition of a kind of jewellery. Among these are the curiously-shaped Chinese tea-caddies and spice-boxes in wall-case A, with their delicate engraved diaper ornament; and —perhaps a still more remarkable example—a cup and cover of Malay work, which was on one of the dressers (on the north side of the room), but of which there seems to be no mention in the catalogue. This is covered with a very slightly relieved ornament, of which the leading lines are formed by a kind of miniature form of strap-work, something like Elizabethan detail on a very minute scale, with a filling of smaller ornament between. But English work shows in some cases a minute delicacy and finish which we are used to associate rather with silversmiths' work; as in the very pretty set of "six liqueur glasses" (so-called in the catalogue, though they are entirely pewter), with well-designed stems, and a bowl ornamented with a band and base of very minute hatching. This is very simple, yet the result is refined enough for any table.

Among the classes of objects illustrated candlesticks are tolerably numerous, and wall-case A contains examples of many types, including some very good French ones of exactly the same class as we frequently see in silver, and which, perhaps, are better suited to that material, and some English ones of peculiarly graceful line, one of them having almost the proportions and lines of a tall Venice glass. Dresser C contains two French altar candlesticks of a most sumptuous description, perhaps rather too much so for the material, for the employment of such large and exuberant ornament rather presupposes a valuable metal. Where pewter shows at its best, in short, is where the lines are pure and fine, not where the ornament is exuberant and bossy in character. Among the more refined objects, let the reader look, for

instance, at the "two cinquefoil plates" in dresser B, late XVIIIth century work; the design here is very unusual, and on the most delicate and refined lines; and it is noteworthy that in spite of their date, there is a touch of late mediæval feeling about them. In dresser E, again, is one catalogued as "a plate with ornamental rim," a plain octagonal plate with a small scalloped ornament round the edge, which is a model of good taste; and one next to it, which we cannot identify in the catalogue, with its variegated and waving outlines, is a perfectly beautiful bit of work, depending for its effect entirely on refinement of line.

There are curiosities also which interest one from their picturesque or unusual character, or their suggestiveness, apart from direct artistic beauty. How completely Teutonic in suggestion, for instance, are the "Two Guild-cups (German)" on the top of dresser D. How very German they are, with the armed men on the top and the general look of bluster about the whole design. Hexagonal food-bottles, of which there are several, are a form of article which has its peculiar historical interest; why should this hexagonal plan be thought specially suitable for food-bottles? The only one that we noticed was dated is of 1673. Among other curiosities are a very fine and interesting collection of spoons of various dates—the older type, with the bowl broad at the end and the thin handle with a capping to it, is the best to look at, but has the drawback that the handle is not shaped for convenience to the hand; the shape of the bowl is better in style than the modern shape, and might be revived.

There are many other things that might be mentioned. We can only advise all who are interested in decorative art to visit Clifford's Inn for themselves.

NOTES.

The Architectural Association Meetings. THE Architectural Association are considering the question of altering their night of meeting, one reason given being that members often want to go out of town from Friday afternoon to Monday morning—not necessarily on holiday, but that it is often a convenient part of the week for travelling to inspect work going on in the country. This hardly seems to us a sufficient reason for altering the day of the week of meeting (Friday) which has been adhered to, we believe, ever since the Association was founded; and in the interests of the Association we should advise them against making the change. Almost every important society has a fixed week-day for its meetings, and to alter the traditional arrangement without very strong cause is undesirable, and is likely to lead people to think that a society which does so is in an unsettled condition. We may also point out, as we give more space than any other journal to reporting the Association meetings, that if Monday (as proposed) be substituted for Friday as the evening of meeting, it will be difficult to give such full reports of the discussions as we are now able to give, If the Association wish to make any change as to the time of meeting, we counsel them rather to change the hour than the day. As we have before pointed out, 7.30 is an inconvenient hour and at variance with the practice of almost all large societies in London, the usual meeting hour being 8 o'clock. When the Association started as a small body of architectural assistants, an early hour (6.30 we think it then was) probably suited the convenience of the members best. When it developed into a large and influential society, as it now is, it was evidently felt that the original hour was unsuitable; but to put it at 7.30 was only a half-measure; it is neither one thing nor another; and, for the considerable number of older members whose habit is to dine before going to a meeting, it is exceedingly inconvenient, as it means an entire upsetting of their usual arrangements. We know that some members are often kept from the meetings who would otherwise attend them, in consequence of their being held at this abnormal hour.

Liabilities for Street Paving. YET another decision has to be noted on the subject of liability for street paving—Millard *v.* Balby with Hexthorpe Urban District Council. The Urban District Council had served notices on the owners of property abutting on a street which was not repairable by the inhabitants at large, calling upon them to pave, etc., the street, and as the notice was not complied with the Council did the work themselves, completing it in December, 1901. In March, 1902, the appellant, one of the owners, sold his premises. The apportionment of the cost of the work was served on the appellant under section 257 of the Public Health Act, 1875, in November, 1902, and the demand for payment of the sum was made in May, 1903. The appellant took the point that he was not liable since at the time the demand was made he had ceased to be the owner of the premises, and that this was essential in addition to ownership at the time the work was completed, and the Divisional Court has upheld this contention. From the case of Mayor of Hampstead *v.* Gaunt, which we noted in our issue of May 2, 1903, it would appear that the purchaser, by virtue of section 77 of the amending Act, may be rendered liable for these expenses whenever the work was done, as the time was from demand; but when the Bill is introduced consolidating the Public Health Acts this point requires consideration, since it is obviously very inequitable that the purchaser who buys a house which he sees abutting on a public road fully made up should subsequently find himself rendered liable for the paving expenses which have been incurred long before. In Gaunt's case ten years had elapsed before the demand was made.

Automatic Railway Couplings. IN a letter to *The Times* of Monday last Mr. Richard Bell points out that the number of fatal and serious accidents to railway shunters in the United States has been decreased from 11,710 in 1893 to about 1,800 in 1903. This result is undoubtedly attributable to the State enforcement of automatic couplings. On the other hand it is stated that during the same period the returns of British railways show an increase of 2,000 "coupling" accidents, causing loss of life or serious injury. Mr. Bell appears unwilling to believe that the backwardness of British railways with regard to automatic couplings can be due to our lack of inventive capacity or our want of humanity, and he expresses the very reasonable opinion that the nation should demand to know upon whom the responsibility rests—the Board of Trade, the railways, or inventors. We do not believe it is necessary to look far for the answer to this question. Numerous forms of automatic coupling are in existence which, if not absolutely perfect, are thoroughly practical and suitable for adoption. But the fact is that railway companies have a deep-rooted objection to novelties that are not absolutely forced upon them by the laws of the land, or the equally inexorable laws of competition. Railway companies are as reluctant to take up inventions as any Government department, and, although professing anxiety to adopt automatic couplings and other life-saving appliances, they do nothing and will continue to do nothing until compelled to act by the strong hand of the law. The stereotyped excuse is that no perfectly satisfactory coupling has yet been found. This is clearly nothing better than a subterfuge, for, even if British inventions were worthless, it would be easy to adopt, with any necessary modifications, the American type of coupling which has saved thousands of lives within the last few years. The matter is one demanding immediate action on the part of the Board of Trade, or the intervention of Parliament if the Board feels unable to cope with the powerful railway interest.

Concrete-Steel Factory Building. A VERY interesting example of concrete-steel construction is afforded by a factory building recently erected in Long Island City, New York. This was originally designed with brick walls and timber roof trusses of what is known as the "slow-burning" type, but it was afterwards decided to make the building fireproof throughout. It is worthy of note that the adoption of concrete-steel involved an expenditure of only 15 per cent. more than that of the original design, this excess being less than the additional cost of any efficient fireproof system. Another important point is that the change of design had the effect of reducing the estimated fire insurance premium to one-twentieth of the amount that would have been payable on the original design. A complete description of the methods followed in the construction of this building is given in the *Engineering Record* of January 16, and should be of interest to our readers. One of the most remarkable features in this building is the use of concrete-steel transverse roof girders of 50 ft. 2 in. clear span. These we believe to be the longest concrete-steel beams hitherto built, and they serve to emphasise the great possibilities of the new material which is now at the disposal of architects.

Electric Traction on Railways. A VERY suggestive paper was read this week by Mr. F. F. Bennett to the Institution of Electrical Engineers on "The Railway Electrification Problem and its

Probable Cost for England and Wales." He began by pointing out that if the suburban railway system is to hold its own against municipal tramway competition the average speed must be accelerated and a more frequent service of trains provided. The electrification, therefore, of the suburban lines will soon become a necessity, and it is imperative that the systems used by the different companies be standardised. Mr. Bennett recommends the formation of a central directing board consisting of members appointed by the railway companies. Their duty would be to select a system of electrification and to divide up the country into sections, each of which would contain a central power station which would supply all the railway lines within its area. The cost of this scheme he works out for England and Wales, and estimates that after paying for interest and depreciation there would be a fraction of a per cent. left to increase the dividends of the various companies. This he rightly considers not a sufficient inducement to effect such a revolution in traction methods. He goes a step further, however, and suggests that by halving passenger fares and doubling the train miles by giving a more frequent service the alteration would lead to an increase of traffic of at least 300 per cent. The increased receipts and the improved "load factor" on the power stations would enable a substantial profit to be made in this case. As an experiment he suggests that the railways in the fifteen-mile radius round Manchester be electrically equipped. If the reduction of fares by a half resulted in trebling the traffic, then the electrification could be proceeded with rapidly. It is foolish of railway companies to act individually. A central body like the Railway Clearing House could easily control the working of the various power stations required. As an example of how British internal trade is handicapped by heavy railway rates, he mentions that the carriage of a ton of apples from Folkestone to London is 1*l.* 4s. 1d., whilst the freight from California to London is only 15s. 8d. The carriage of a ton of eggs from Galway to London is more than four times the cost of the carriage from Russia to London.

The Olympic Theatre, Wych-street: 1804-1904.

AFTER varying fortunes, its last use being for the services of the St. Giles's, Little Wild-street, Mission, the Olympic Theatre is now being pulled down. Its predecessor had been built in 1849, after F. W. Bushill's designs, which were illustrated in the *Builder* of December 22-9 of that year, upon the site of the equestrian circus which Philip Astley began to build in 1804, and opened in September, 1806, as the Olympic Pavilion. Astley made his own designs and used the oaken timber and spars given to him by the King of *La Ville de Paris*, a prize man-of-war in which William IV. had served as a midshipman. Elliston took a lease of that house as the Little Drury-lane Theatre, which on March 29, 1849, was destroyed by fire. In 1889-90 Messrs. Holliday and Greenwood, who contracted for 21,577*l.*, rebuilt the theatre for Mr. Charles Wilmot upon an enlarged area of about 13,500 sq. ft. after Messrs. Crewe and Sprague's plans and designs, having a "mule-shoe" shaped auditorium for some 3,000 persons, a proscenium 34 ft. wide, and a stage 54 ft. deep; the stage being, it is said, second in size to only that of Drury-lane Theatre. Mr. Wilson Barrett, lessee, opened the new house on the night of December 4. Three years afterwards the same architects carried out some alterations, with redecoration, etc., of the house, for its conversion into the New Olympic Music Hall, under which name it was opened by a company on August 7, 1893, but in less than twelve months the property was offered for sale at auction under an order in Chancery. Then, in the summer of 1898, the New Italian Opera Syndicate was formed for giving lyrical performances there. In the winter of 1889-90 the owner of the lease agreed to sell to the London County Council for 12,000*l.*, and at a computed saving of 25,000*l.* to the Council (who had scheduled the site for their new street), his interest for an unexpired term of fifty-one years at a rent of 2,250*l.* per annum, Lord Craven being the ground landlord. For the more fortunate days of the Olympic, which stands, with Craven-buildings and Maypole-alley, on the site of Craven, formerly Drury, House, we must turn to the careers of Miss Foote (Countess of Harrington), Madame Vestris (who was lessee in 1832-9 and lived for a while in Craven-buildings), Mrs. Nisbett (Lady Boothby), Liston, and William Farren, and in a more recent time, of Charles Kean, Charles Mathews (who there made his first appearance on the stage), Robson, Horace and Alfred Wigan, and Benjamin Webster.

The Parish Church, Deptford.

A FUND has been opened for carrying out the restoration, at a computed outlay of some 1,400*l.*, of the tower of the parish church of St. Nicholas at Deptford. The old tower, from the level of the belfry-floor upwards, has been in a dangerous condition during some years, insomuch so that the ringing of the bells was discontinued, and the fabric suffered much damage from a gale on October 17, 1901. The church, which is situated between Deptford-green and the Stowage, was enlarged in 1630; sixty years afterwards the nave, aisles, and chancel were entirely rebuilt of red brick with stone dressings and angle quoigns, and have been repaired on two subsequent occasions. The Early English tower, which is constructed of stone, with buttresses at the corners, rises in three stages, and once formed a prominent landmark, due west from Greenwich Hospital, for the shipping on the Thames, and a church dedicated to the patron saint of sailors has stood in the old manor of West Greenwich or Depeford since, it is said, the XIIth century. Amongst the monuments are those erected in memory of two children of John Evelyn, who lived at the adjacent manor house of Sayes Court (demolished in 1728), of Captain Fenton, who went with Frobisher on two voyages, and of many naval commanders who fought against the Dutch, French, and Spaniards at sea. About nine years ago was removed from over the porch of the charnel-house in the churchyard, into the interior of the church, and protected by a glass case, a fine piece of carving in oak representing Ezekiel's Vision in the Valley of Dry Bones, and attributed to Grinling Gibbons.

The Goupil Gallery.

THE Spring Exhibition at the Goupil Gallery is not quite as good as usual; there is a lack of works of the first order, though there are a good many small works which have their own interest. M. Carrière's heads (1, 5), painted as if seen through a fog, represent a weak and affected style of art. Mr. Weiss exhibits a depressing and melancholy "February Floods" landscape (18), with a good deal of power about it, and close to it a little painting, "Sunny Morning" (19), a scene in a village, as bright as the other is gloomy. Mr. Robert Fowler's "Grey Day on Great Orme" is a fine, delicately-painted sea view with a cliff foreground. Delicacy of any kind is absent from Mr. Peppercorn's two small smudges—we can hardly call them paintings—"The Hayfield" and "Surrey Homestead" (32, 36). Trees in nature are not flat black masses. One of the best landscapes in the room is M. Weissenbruch's "Sunny Pastures" (28), an admirable composition. M. Le Sidaner has several works in the style of handling he has invented, two of which, "La Statue" (58) and "The Gateway" (60), are really fine works, and perhaps this artist will gradually get rid of what is exaggerated in his method and discover that he has some better capabilities than that of merely developing a mannerism. Mr. J. M. Swan's "Fortune and the Boy" (44) is the most important picture in the gallery, and should have been more centrally hung. Among small things are two interesting little landscapes by "Lépine," very carefully finished views at Charenton and Caen (57, 62), which look as if they were painted a good while ago; an "Open Sea" (54), by Dupré, which is not like sea, and a "Sea off Yarmouth" (68), by Mr. Montague Smyth, which is. There is a classic pastoral by M. Fantin-Latour (41), in his usual remarkable style—the Cupid figure is beautifully painted; some architectural subjects by Mr. A. G. Webster, which are too woolly in texture; some by Bosboom, not very interesting; and one or two by Mr. Brabazon, in which the indicated buildings are formless and out of perpendicular. Architecture is certainly not well treated in this exhibition.

An Exhibition of Pastels.

THE pastels by Mr. Alfred Hitchens at the Walker Art Gallery, in New Bond-street, consist principally of landscapes on a small scale—a kind of subject not the best adapted for pastel, since the artist in this case is limited by the tints he has at command, which cannot represent the infinite variety and modification of colour in nature. On a large scale variation and blending of colour can be obtained in pastel by cross-hatching with different colours, but on a small scale this can hardly be done, as the resulting texture would be too coarse. Consequently, in such a collection as this, we find that the success of the small landscapes depends very much on the degree in

which they can be represented by the usual pastel palette—if one may borrow the term from brush-painting. Sunset effects are nearly always too strong when attempted on pastel, as we find here. In other examples, such as "The Thicket" (14), "A Welsh Path" (16), "A Welsh Road" (18), and others that might be named, where the tones of the landscape come within the scale of pastel, the effect is very successful. Still, we cannot regard pastel as a suitable medium for landscape; it is apt to be too mechanical. Some pastel portraits are also exhibited, of which one of a child (26) is very pleasing.

Mr. Reed's Drawings.

AT the Leicester Galleries is a collection of the *Punch* drawings of Mr. E. T. Reed, the author of the delightful series of the "animal world," some of the original drawings for which are included in the collection. Most of the remainder are political caricatures, very clever, but the interest of which is based on other than purely artistic qualities. There is something higher than this, however, in "Blind Travellers Gone Astray at a Ford" (23); and the "prehistoric peeps" show a remarkable imaginative power. It need hardly be observed that the whole series of subjects are characterised by a thorough mastery of line drawing.

Flower and Fruit Pictures.

MR. WALTER TYNDALE has on view at Messrs. Dowdeswell's Gallery a collection of water-colours almost entirely dealing with the representation of fruit and flower stalls, making a bright and fascinating display of colour. The idea is a new one, and the execution is very careful and conscientious. In most of them a little effect of composition is realised by the addition of figures or of a corner of building, in general very effectively, as in "A Greengrocer at Viterbo" (33), where the pile of flowers is flanked by a sloping buttress. Mr. Tyndale can also treat architectural subjects without the aid of the flowers, as he shows in the "Street in Old San Remo" (23) and the drawing of the staircase at "S. Pelegrino, Viterbo" (34). It is a very interesting and pretty exhibition.

The Torquay Competition.

IN reference to our Note last week *re* this competition Mr. Lanchester, who is the assessor, desires us to state that the condition in question was issued without his knowledge and despite his expressed opinion that he should be consulted in all such matters. On being notified of it, he at once stated that he could not regard a condition formulated at such a late stage as binding on competitors. It is his view that the course adopted was a most undesirable one, and that every allowance must be made for the unfortunate position in which competitors have been placed. We had no information at the time as to who was the assessor; had we known it was Mr. Lanchester, we should have felt convinced that he could not have sanctioned a course of action so unbusinesslike and so unfair to the competitors.

THE ARCHITECTURAL ASSOCIATION:

THE DAY OF THE FORTNIGHTLY MEETING.

A SPECIAL general meeting of this Association was held on Friday last week, at 7.15 p.m., in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, W., Mr. H. T. Hare, President, in the chair, the meeting having been called for the purpose of discussing whether Friday was the most suitable day of meeting.

The Chairman said they had met to consider the desirability of changing the day of meeting from Friday to some other day in the week. The matter had been mentioned a great many times in committee, and various members had brought the subject forward from time to time, but so far it had not been seriously considered. There were probably some reasons why Friday was not the best day of the week. The meetings always had been held on Friday, and from the point of view of tradition there was something to be said in favour of keeping to that day. If, however, there were practical reasons which would make some other day more suitable, tradition must not be allowed to stand in the way of change. One reason why some other day would be better was that Friday was a day when members who lived in the country, or members who liked to take a long week-end, could leave town so as to have a full week-end. Another reason was that a certain number of members were of the Jewish faith, and they could never attend Friday meetings. He was not aware that there were any reasons why some other day would not suit as well as Friday, but he should be glad to know the opinions of the members. The evening which had been suggested was Monday; it was felt that it would be well not to have the meeting in the middle of the week, and that it must be at the beginning or the end, for a meeting in the middle of the week broke into the week too much, and made it inconvenient for many men to attend. If there seemed to be a general opinion that a change was desirable, the Committee intended to take a general vote of the whole body of members when the voting-papers for the elections were sent out, and in that way they hoped to get the opinion of the members on the subject.

Mr. Walter Millard said he supposed Friday was fixed in the old days to suit the members then, but it did not follow that the Association was bound to that day except in the way of pure tradition. Friday must have suited somebody in the old days; the question was, Did it suit the members now? If it did not, then the only other suitable day was Monday, and, of course, not the Monday on which the Institute met. It was a matter for the members to think about.

Mr. J. Osborne Smith said that in matters of this kind he was conservative. He preferred Friday.

Mr. W. H. Seth-Smith said the Association was a progressive body, and they went with the times. Judging from the advertisements of the railway companies, the week-end was a popular institution, and there was no doubt that a good many men went away from town from Friday evening until Monday morning. Monday seemed a very good day for the meeting of the Association. Some of the members of the Association were also members of the Art Workers' Guild, and that body held its meetings on Friday, and it seemed undesirable for that reason also that the Association should continue to meet on that day.

Mr. F. J. Osborne Smith said that Monday was quite as inconvenient from the point of view of the week-end as Friday.

Mr. Arnold Mitchell said it was a fine thing to be able to extend the week-end as long as the last speaker apparently did. It seemed to him (the speaker) that the week-end argument was a strong one—and not from the holiday point of view only, but from the point of view of work. The members of the Association who had country work made an effort to visit their distant jobs on Saturday—he did it continually—and they tried to get away on Friday night so as to interfere less with the week's work, and in order to see those works which took more than one day to visit. He had clients in the country who preferred to meet him on Saturday, and in his own case that resulted in a minimum of interference to his weekly work. He was an uncompromising opponent of the change at first; it seemed revolutionary; but on reflection the change seemed to be a most desirable one, which would help the Association, and which would result in better attendances.

Mr. F. Lishman asked if the change from Friday to Monday would be agreeable to the Institute. The Association turned out the Institute Library once a fortnight, and it might be that the Institute would prefer that to be done each Monday, rather than alternate Mondays and Fridays.

The Chairman said that they had not yet ascertained the views of the Institute, but there was no reason to doubt that the Institute would be favourable. Of course, they would ascertain the Institute's views before they went further.

A vote was then taken of the members present, and the Chairman stated that there was a majority in favour of the change, but a good many members did not vote.

The Special Meeting then concluded.

The Ordinary General Meeting was then held.

The minutes and nominations having been read, the following gentlemen were elected members of the Association:—Messrs. J. F. Blakiston, Campden Hill, W.; E. H. Gandy, Canonbury; and J. W. Fair, Hyde Park.

New Premises Fund.

The Chairman announced the following further donations to the New Premises Fund:—*i.e.*, Messrs. Wm. Glover, 10*l.* 10s.; F. L. Pearson, 10*l.* 10s.; W. T. Walker, 5*l.* 5s.; H. V. Shebbeare, 2*l.* 2s.; and S. Box, 1*l.* 1s.

A vote of thanks having been accorded to the donors,

The Chairman said he should like to call the attention of members to the suggestion made at the beginning of the session—*i.e.*, that the general body of members should double the amount of their subscriptions for this session. That invitation had been responded to in a very gratifying manner, but there were still a great number of members who had not responded. He hoped the suggestion would be borne in mind, because the Association had to face a large expenditure in the equipment and cost of building new premises, and there was still a large deficit. He hoped that every member who could possibly afford to double his subscription would do so, for if that were done it would make a substantial addition to the fund.

Mr. D. G. Driver, Secretary, then announced the Fifth Spring Visit on March 19 to the Belgrave Hospital for Children, Clapham-road, by permission of Mr. H. Percy Adams, members to meet at the building at 2.30 p.m. A visit will afterwards be paid to the Bishop's House, Kennington Park.

Mr. Driver also proposed a vote of thanks to Mr. G. F. Bodley, R.A., for conducting a party of members over Holy Trinity Church, Kensington, on February 20; to Mr. Aston Webb, R.A., for allowing a party of members to visit the Royal College of Science, Kensington; and to Messrs. Peacock and Dowie for conducting the party over the works. The motion was agreed to.

Mr. H. Tanner, jun., Hon. Secretary, announced a Discussion Section meeting on March 16, when a paper will be read by Mr. P. L. Waterhouse on "Practice in the Colonies." He also announced a Camera and Cycling Club meeting on March 22—paper by Mr. F. R. Taylor on "The Excursions of the A.A. Camera and Cycling Club in 1903."

The House List.

The Chairman then read the House List for Session 1904-1905 as follows:—

President, Mr. E. Guy Dawber.*

Vice-Presidents, Messrs. Arthur T. Bolton and *J. S. Gibson.

Committee (ten to be elected).—Messrs. R. S. Balfour,* G. B. Carvill,* Walter Cave, F. C. Eden, Henry T. Hare,* Arthur Keen, F. Lishman, Arnold Mitchell,* John Murray,* D. B. Niven, W. A. Pite,* J. MacLaren Ross,* W. Howard Seth-Smith,* W. J. Tapper, A. Brumwell Thomas, A. Needham Wilson, and E. W. Wimperis.

Hon. Treasurer, Mr. Francis Hooper*; Hon. Secretaries, Messrs. Louis Ambler* and H. Tanner, jun.*; Hon. Librarian, Mr. W. A. S. Pettit; and Hon. Assistant Librarians, Messrs. Edwin Gunn and C. M. Crickmer.

The Chairman announced that any fresh names might be handed in for nomination at the meeting on April 22, but they must bear the signatures of two members.

Schools.

The following paper on "Schools" was then read by Mr. J. W. Simpson:—

* Against name represents member of the present Committee.

"Education is on everybody's lips. Our great schools and colleges are in the middle of a revolution which, like most revolutions, means discontent with what we have and no clear idea of what we would have." Thus said James Anthony Froude, shortly before the passing of Mr. W. E. Forster's great measure of Elementary Education in 1870. Thirty-five years have passed since he addressed those words to the students at St. Andrew's; a system of elementary education has come into existence, the Act under which it is administered has been amended, reamended, and extended from time to time as necessity and experience have suggested; yet what Froude said in 1869 may be repeated with equal truth in 1904. Well! Better a very South America of revolution in education than stagnation; to me it argues no small strength of national character that we should have thrown down the structure reared with so many years of patient care, and be already at work with an equal enthusiasm upon a new fabric, of, as we hope, better design. For we, who are brought into contact with the new authorities created by the Education Act of 1902 know well that—setting aside the few fanatics who are engaged in trying to cut one another's doctrinal throats—enthusiasm there is.

The movement, you will observe, does not so much affect matters of elementary education whereof the principal lines are now pretty well established, as of the so-called secondary and higher instruction. We are, without doubt, about to witness, by reason of the Act of 1902, just such a development and organisation of advanced teaching, as may be seen to have taken place in primary teaching when the condition of the latter in this country now is compared with what existed in 1870.

English Schools Previous to 1870.—It is instructive to look back for a moment at the state of English schools previous to that date. Charles Lamb, whose death at fifty-nine was, it may be noted, about equi-distant from 1870 in point of time with the present date, writes in his "Recollections of Christ's Hospital":—"As a novice, I was soon after taken to see the dungeons. These were little square Bedlam cells, where a boy could just lie at his length upon straw and a blanket—a mattress, I think, was afterwards substituted—with a peep of light let in askance from a prison orifice at the top, barely enough to read by. Here the poor boy was locked in by himself all day, without sight of any but the porter who brought him his bread and water—who *might not speak to him*—or of the beadle, who came twice a week to call him out to receive his periodical chastisement."

Well, we are not like to be called on to provide dungeons in the plan of any modern school buildings we may have to prepare; and in other respects the difference between educational requirements then and now is hardly less striking.

Fiction, the pictured view, so to speak, of geometrically-defined history, has preserved for us the likeness of Dotheboys Hall and its principal, Mr. Wackford Squeers. "We go upon the practical mode of teaching, . . . the regular education system," remarked that amazing foster-parent. "C-l-e-a-n, clean, verb active, to make bright, to scour. W-i-n, win, d-e-r, der, winder, a casement. When the boy knows this out of book, he goes and does it." I do not desire to dwell upon the abuses of those times; I mention them merely as illustrative of the change in our educational morals, which renders what was possible then a matter of scarcely credible comment now. Perhaps, however, while deprecating the morality of Squeers we may recognise in his methods the germ of the technical instruction of to-day.

In your sketching expeditions through country districts you have no doubt come across, and perhaps passed as unworthy of attention, little single-story brick buildings of hideous design garnished with cement travesties of Gothic gables and windows. Over the doorway is the inscription "National School" or "British School." It is a safe wager that if you stop and question the first six architects cycling by on their quest of tit-bits to measure, no one of them will be able to interpret to you the signification of those legends. Yet it is from these buildings that the modern type of elementary school has been developed. They were erected by two societies, the "National Society," founded by Dr. Andrew Bell, and the "British and Foreign Society," by Joseph Lancaster. The first Lancasterian school was opened in 1798, the National Schools dating from somewhat earlier. They were at first mainly supported by private subscriptions, and the term "Charity School" grew to be a more or less invidious epithet of distinction from the richer "Grammar School."

William Cobbett, riding through Sussex in 1823, says:—"I got to Goudhurst to breakfast and as I heard that the Dean of Rochester was to preach a sermon in behalf of the National Schools, I stopped to hear him." Being disappointed in this, he remarks:—"This preaching for money to support the schools is a most curious affair altogether," as, indeed, from his account of it, it was. The money seems to have been distributed by the "Society for the Promotion of Christian Knowledge," upon which society, its treasurer, the parson, and the Methodist school-master, who "was reading to the children out of a tract-book and shaking the brimstone bag at them most furiously," he bestows unmeasured abuse as he rides away. Later on, in 1834, grants of public money were made in their support, and shortly after an Education Committee was formed in the Privy Council to administer these grants.

The Bell and Lancaster Elementary Schools were the first to be planned on a scientific basis of relation between the system of teaching and the building. The method was, shortly, as follows:—One master had the entire control of the school. The number of scholars was unlimited; Lancaster is reported to have said that he would not hesitate to place as many as 1,000 under a single master in one room, though it is not reported that he ever actually did so. The building consisted merely of one room, of oblong form, and of suitable size for the number it had to hold. The master's desk was upon a raised platform at one end, and the scholars sat facing him at long desks placed transversely to the long axis. On each side of the desks, and the whole length of the room, was an alley or gangway 5 ft. or 6 ft. wide. The floor was inclined from the master's desk to the further end, where the highest class was placed. The whole school was divided into small classes according to attainments, the feature of the system being that every class was taught by other scholars, who had themselves reached a slightly greater degree of proficiency than those they taught. These "monitors," as they were called, occupied the side gangways already referred to, and formed their little classes into semicircles for reading and so on. No special arrangements were insisted on as to lighting, the windows being generally at both ends and on one side. The system of monitors became discredited as matters advanced, and their place was taken, about 1826, by "pupil teachers," under the development of the methods of Mr. David Stow, of Glasgow. These "pupil teachers," I may perhaps mention, are drawn from the ranks of the scholars, as were the monitors; but, although themselves still under training, are professional teachers who have reached a definite age limit and passed a certain qualifying examination.

The school-house plan was modified under the "Stow" system, but the principle of immediate supervision by the master remained. The school-room was still the simple oblong plan, though as much as 28 ft. or 30 ft. in width. A very large stepped gallery occupied the end furthest from the door, capable of seating quite two-thirds of the pupils. This was used for collective lessons, and, the buildings being designed in most cases for use also as Sunday schools, was considered of great importance, not only for efficient supervision, but as being well suited to the purposes of religious instruction. A row of long desks was placed against each of the side walls, for writing lessons, and one or two separate class-rooms were provided at the end of the room opposite the gallery, each with its own gallery.

The "pupil teacher" system proved successful, and the plan, with minor modifications, remained pretty much on these lines until the Committee of Council on Education, mentioned above, began to organise matters about 1840 and onwards. In the early schools, you will observe, simultaneous teaching was the aim of the plan; now, as pupil teachers became fairly efficient they were found capable of instructing separate classes with advantage, though, being young, they required supervision at their work and the help of the master's authority. Therefore, note how the problem had varied its conditions. What was now wanted was a series of classes, all separately taught, yet all under one controlling eye. The Gallery and Lancaster plans, where the seats were placed at right angles to the long axis of the room, were no longer suitable. The reason for their compact grouping had disappeared, and they did not permit classes to be effectively isolated one from another. Accordingly, the seats, instead of being placed at right angles to the long axis, were now put parallel thereto, and some three rows deep of desks only used, so that a young teacher's voice might easily reach the scholars. As it was clearly inadvisable to have classes seated face to face, they were placed side by side; the rooms were reduced in width, leaving room only for the class to be called out in front of the desks and grouped around the teacher. Here, then, at last we have our old friend the long school-room, 18 ft. or so in width, having seats on one side only and cross-lighted.

The classes were generally separated by a curtain, and the room was very often an L or T in shape, so that the master could readily overlook all that was going on from the intersection of the arms. Although there was generally a class-room to each department, where a special class could be taken, there is no hint as yet of the class-room plan as now understood. This mention of "departments" reminds one that boys and girls were by this time generally separated instead of mixed, as in the older and smaller schools, where considerations of expense did not allow of both a master and mistress being engaged. This was, however, by no means universal. Such, then, was the type of elementary school-building which prevailed up to the time of the momentous Act of 1870, which established School Boards.

It may be noted, before leaving this part of my subject, that the schools up to this date open to the working classes and the masses of the labouring population were what were afterwards called "Voluntary" schools. That is, they were maintained by private effort, supplemented by Parliamentary grants. Of these, the "National" or Church Schools counted in 1869 upwards of 808,000 children, as against 217,000 Dissenting and 68,000 Roman Catholic scholars.

School Boards being now established, and the directions of Parliament being peremptory as to the provision of sufficient school accommodation, the building of elementary schools proceeded apace. Public interest in the arrangement and designing of such buildings received a great stimulus; the adoption of the dual desk, with its attendant facilities for placing the desks in four or five rows deep instead of only three, brought about greater compactness in the disposition of classes, and required a wider plan of school-room.

Prussian Schools.—Attention was directed to the various Continental schools, and their relative merits were compared with the type developed from the "pupil teacher" system of this country. It is impossible for me to dwell at any length on foreign educational methods; it will suffice for my purpose to state generally that those of Prussia were found to be at once fairly representative of those of Europe, and in a very high condition of efficiency. The conditions of entrance and study in these Prussian schools render necessary much greater isolation of the class than with us. A class-room, in fact, as has been well observed, encloses within its four walls a little school in itself. This implies, naturally, a highly-trained teacher in charge of the class, who is equal to maintaining discipline without the constant moral support of the head master. It is typical of our national methods that, while approving and accepting the type of plan thus evolved, we rejected the method of which it was the logical result. It seems to have been thought that if every class were taught in its own room, better and more rapid progress would be made by the scholars; at the same time it was desired to retain the greater economy of teaching power given by grouped classes. It is also typical of our national methods that, after a trial school had been built which was considered more or less a failure at the time, we gradually evolved a combined "class-room" and "pupil teacher" system of our own, which has proved very satisfactory. This trial school was built in 1872 by the London School Board in Jonson-street, Stepney, and marks a most important step in the development of our elementary school planning. It was erected from the designs of Mr. T. Roger Smith, and you are, no doubt, familiar with its lines from published descriptions and illustrations.

The Prussian class-room plan, already alluded to, contained no hall for collective teaching and assembly, though an examination hall was frequently attached to a school, as often as not on the top floor, being used perhaps three or four times in a year for examinations or public functions. Mr. Roger Smith's plan, however, retained the assembly hall or large school-room of English tradition, and added class-rooms opening out from it on three sides. It was a remarkable plan, and has greatly influenced subsequent school development. And I venture to draw your attention to the fact that it was the outcome of competitive design.

Since then the class-room system has steadily gained in favour, and the corollary of additional trained teachers has been accepted as necessary. The assembly hall, after being abandoned for a considerable period as extravagant, during which time the long school-room was made to serve its purpose, has been reverted to. In short, the type of elementary school plan deduced from the Act of 1870 has been, with local variations, formulated for some time past on the lines with which we are all fairly well acquainted.

I have taken you at some little length through ancient history, because I wished to show you, as clearly as might be in the time at my disposal, the growth of the plan from the method of teaching. Too many of us take the schools we have to design as merely structures to be contrived to hold a certain number of desks disposed in a given way. Well, it may serve the purpose for the moment to accept the formula which others have worked out. It is, doubtless, economical of time and trouble, to collect plates from professional journals, and select what seems most appropriate—as a ready-made clothier reaches down the garment most nearly fitted to his customer—but, believe me, no new development, no original solution of the problem set you, can be obtained without a thorough study and knowledge of the conditions on which that problem is based.

The New Education Act.—Those of my audience who are acquainted with the new Education Act of 1902 will, perhaps, pardon me if, before proceeding further, I invite you to glance at the principal provisions it contains affecting our work as architects. The bill consists of four parts and four schedules. The first part constitutes the new Local Education Authorities, who, as you are all aware, supersede the old School Boards, and are endowed with wider-reaching powers and duties. The essential matter of part 2, from our standpoint, is contained in the opening words:—"(1) The local education authority shall consider the educational needs of their area, and take such steps as seem to them desirable, after consultation with the Board of Education, to supply or aid the supply of education other than elementary, and to promote the general co-ordination of all forms of education." It proceeds to deal with the concurrent powers of smaller boroughs and urban districts, the raising of rates, and the religious instruction bogey, with which matters I need not trouble you.

Part 3 confers upon the new authorities the powers and duties of the School Boards, which the Act abolishes, and proceeds to direct that they "shall also be responsible for and have the control of all secular instruction in public elementary schools not provided by them." It further requires them to "maintain and keep efficient all public elementary schools within their area which are necessary," deals with their management, the use of buildings out of school hours, endowments and grants, and contains a form of exorcism for spiritual troublers of the peace in elementary, as part 2 already has for higher, education. There is in section 7, sub-section (*d*) a direction as to the upkeep and repair of non-provided school houses which should, in the case of impecunious managers and a close-fisted authority, "breed," as Mrs. Lirriper put it, "fruitful hot-water for all parties." It is, however, a little bit of sugar for the surveyors rather than for us, and I pass it by. An interesting provision is that of sections 8 and 9, by which a local authority is bound to give three months' public notice of its intention to build a new school or substantially enlarge an existing one. During this period certain interested parties, or even "any ten ratepayers in the area," may appeal to the Board of Education and challenge the proposed school as unnecessary. Decision as to the validity of such a challenge rests with the Board f Education.

It would seem that this provision may very much hamper an education authority in its negotiations for a site. It is clear that the notice should be given at the very outset of the scheme, and before obtaining the approval of the Board of Education. Otherwise the latter might be required to arbitrate in a matter which they had already prejudged. Should the Board, after holding a local inquiry, be satisfied as to the propriety of the proposal, the Local Government Board has then to be applied to for their sanction to borrow money to acquire the site in question. By this time the ground may, at any rate in the owner's opinion, have greatly increased in value, or be no longer in the market. I cannot conceive of private negotiations being carried on effectively where so long a period must, and an indefinite time may, elapse before the transaction can be completeted. Of course there are compulsory powers to fall back on, but these do not furnish the most speedy nor the most economical means of acquiring property for public purposes. Some provisional means of ear-marking a site, pending the possible delays, would appear to be needed, such as a short lease with option to purchase in a given time and a forfeit for non-completion.

I mention this matter because pretty complete sketch plans and estimates will be required by an inspector holding such an inquiry under the Act. He is especially directed to inform himself on the question of economy of the rates, and the drawings would have to be prepared at an earlier period of the scheme than heretofore.

With the general sections of part 4 I need not trouble you, though you should note that section 22, sub-section (2) limits the age of elementary scholars to sixteen years. The four schedules, too, though interesting to all engaged in educational work, do not come within our ken to-night.

You will not, I trust, consider that this cursory and superficial comment on the Act exceeds the limits of the subject on which I have been bidden by your President to discourse to you. The Act is in itself, as I have shown, of primary importance to every architect engaged in designing schools, and it should be borne in mind that it is, for all that, but the corollary and completion of a round dozen of previous enactments still in existence. Some of these it varies slightly and others widely, but all require to be read and studied in conjunction with it if its full import is to be seized. As I have shown you, our present system of elementary education, and consequently of elementary school architecture, has been founded on the parent Act of 1870, and its subsequent emendations.

Rules for Elementary Schools.—The experience in school building requirements gained by that most efficient of Government Departments, now known to us as the Board of Education, was embodied by them in the admirable code of "Rules to be observed in the planning and fitting up of Elementary Schools." This code has been revised from time to time as occasion required, and is familiar to all of you who are engaged upon school design. Excellent as it is, this document is not free from the tendency of all official rules to stereotype plan and crystallise design. Left-hand lighting, a very good thing in its way where writing and ciphering lessons are to be carried on, has been elevated into a kind of fetish, whereas, for some forms of teaching, it is not essential. For the important blackboard demonstrations it is bad—the teacher, unless left-handed, having to work with his back to the light and his face in shadow. The arrangement, favoured by the department, of open air sanitary conveniences, dates from years ago. To oblige a wretched child, quitting a well-warmed class room, to traverse an open playground in rain or snow without even the shelter of a covered way is, in view of modern sanitary conditions, merely barbarous. All latrines should be properly covered in, protected from frost, and accessible dry-shod in all weathers. The rules as to heating and ventilation are hopelessly out of date, though I am bound to admit that the Board of Education exercise a wise tolerance as to their observance. I do not want to stir up strife, but it must be admitted that, whatever demerits it may have under other conditions, the "plenum" system can at least claim to have proved itself a success in elementary day schools.

If, however, I have little but praise for these Rules for Elementary Schools, which have been woven on a foundation of experience, and have become, so to speak, suppled and elastic by age and alteration, I am far from approving the issue by the Board of cut-and-dried rules for secondary school planning. It had been my intention to deal with these at some length this evening, for there are, in my judgment, many points which require reconsideration; but since this paper was written it has come to my knowledge that the whole matter is under revision. The Board, it appears, recognises that the question of secondary school planning is in a transitional condition; and as my desire is to assist, as far as lies in my power, a department for which I have a very real esteem, rather than to criticise for criticism's sake, I shall, with your permission, reserve any comments I may have to make on the subject until later on.

A further reason for postponing discussion is that, as I learn, the Board has recently appointed a new consulting Architect, Mr. Felix Clay, the author of an excellent book on secondary schools, and the matter will no doubt receive sympathetic treatment at his hands.

Yet I permit myself to utter a warning note as to issuing formal rules for planning buildings of which the actual use is not yet settled. For, although "Elementary School" is a term very clearly defined by Article 3 of the "Provisional Code," no definition of secondary education at present exists, so far as I am aware.

I would venture to suggest to the Board of Education that these Rules, both for elementary and secondary schools, should be withdrawn, at any rate for a time, until the effect upon elementary school planning has been observed, of the higher education buildings to be provided under section 2 of the 1902 Act. It is likely, I think, that the local authorities will be strongly desirous of economising in the direction of the lower grade schools with a view to balancing the expenditure on the necessarily more costly secondary buildings. This may possibly take the form of larger classes in the lower divisions, and we may even see a second swing of the pendulum towards the long school-room, combined with class rooms.

The "Rules," I would suggest, might be replaced by a carefully-written short treatise upon the actual methods of teaching, illustrating the work of classes in the different standards and their especial requirements. It should be written by an architect and a head master in collaboration, and be accompanied by sketch-plans of typical buildings, which should be clearly indicated as being suggestions only and not as embodying the considered views of the Board. A new edition revised up to date should be issued every year. Further, I would like the Board to consider school buildings as erected by authority of the Secretary of State, and exempt them from the operation of the, in many cases, obsolete and absurd local by-laws. The Board has absolute and complete control of the design of the buildings and their construction; and, when once they have signified their approval, the buildings should not be liable to the ignorant interference of petty subordinate authorities.

[*To be concluded in our next.*]

CARPENTERS' HALL LECTURES:

THE FORESTRY PROBLEM IN THE UNITED KINGDOM.

THE second of the present series of free lectures on matters connected with building, arranged by the Worshipful Company of Carpenters, was given in the Hall of the Company on the 25th ult., when Professor W. Schlich, C.I.E., Ph.D., delivered an interesting lecture on "The Forestry Problem in the United Kingdom," illustrated by lantern views.

The Earl of Harrowby took the chair, and, in introducing the lecturer, said the question was a very serious one on national grounds alone, and gratitude was due to the Carpenters' Company for having taken up the matter. He thought the Government might follow the example of the German Government in starting forestry schools all over the United Kingdom. In regard to private owners, they found a difficulty in getting efficient woodmen to look after estates.

Professor Schlich divided his address into two parts—(1) the importance of the forestry problem to the nation, and (2) the measures which should be taken to ensure the benefits offered by forestry. Under the first head he spoke of the æsthetic effect of forests, the effect of forests on climate, upon the stability of the

soil, and the produce of forests. As to the supply of timber, the home production probably did not exceed 2 million tons. Over and above that we import rather more than 10 million tons, so that only 16 per cent. of all the necessary timber is produced in the country. The increase in the annual imports between the years 1864 and 1899 amounted to 6⅔ million tons, equal to an average annual increase of 190,000 tons. Of this timber, 87 per cent. are pine and fir, 3 per cent. are oak, and 10 per cent. are teak, mahogany, and other furniture woods. Hence, 90 per cent., or 9 million tons, was material which could be produced in this country by the afforestation of 6 or 7 million acres of land. The timber imported in 1899 came from the following countries:—From Canada, 1,897,000 tons; other British possessions, 318,000 tons; Russia, 2,242,000 tons; Sweden, 2,396,000 tons; Norway, 863,000 tons; France, 825,000 tons; Germany, 403,000 tons; the United States, 992,000 tons; other foreign countries, 168,000 tons. For these imports we paid to British possessions 6,687,000*l.*; to foreign countries, 18,990,000*l.*

The 90 per cent. of timber which could be grown in this country represented a value of 20,623,000*l.* But this was not all. Consider what industries, using wood as their raw material, might not spring up, if the timber were produced at home. In 1902 we imported 525,000 tons of wood pulp, for which we paid 2,398,215*l.* Surely, if we could grow anything, we could grow timber fit for wood pulp! If these and other items were added up, we found that we now paid for imports of timber, etc., the sum of 27 million pounds, all of which could be produced in this country.

As to the uncertainty of future supplies, most European countries imported, and only a few exported timber. If we drew the balance for the whole of Europe, we found an annual deficiency of 2,620,000 tons. For a good many years past Europe had not been able to supply, from within its own limits, the timber required by the several nations. And the deficiency was increasing. Norway was already working her forests with a heavy deficit by cutting more than grew annually, and this had been known for some time past. Sweden was hitherto considered solvent in this respect, but official information lately supplied by our representative at Stockholm, and published in a Parliamentary paper, showed that, according to the statements of the Swedish officials, the forests of that country were now being worked with an annual deficit of 106 million cubic ft. Of the Austria-Hungarian exports very little came to this country, because half of it went to Germany and the rest to various other countries. The exports from Roumania were very small and did not affect the question under consideration. There remained, then, Russia with Finland. That country had enormous areas of forest, but it had far greater areas without it. Moreover, a large proportion of the so-called forest area did not produce timber fit for export. Russia's population and industries were rapidly increasing. Different views were taken of Russia's capabilities to maintain her export of timber. His personal opinion, having weighed the evidence on both sides, was that Russia was a doubtful factor. At any rate, the authorities had already taken measures to restrict the working of the forests, for fear that, some time hence, the available out-turn of the forests might fall short of the requirements of home consumption. On the whole there could be no doubt that the pressure in Europe was increasing and was likely to do so in the future. This was indicated by the course which the average price of timber had followed. From about 1870 to 1888 the price of timber fell, chiefly owing to the great development of the means of transport by sea; from 1888 to 1894 prices were steady, but in the latter year a gradual rise set in, which in 1899 amounted to 18 per cent. The South African War brought some disturbance, but in 1902 a further advance occurred, so that the total rise during the eight years 1894 to 1902 came to 20 per cent. There could be no doubt that we should never again see the low prices of ten to fifteen years ago, because the more accessible forests in European exporting countries had been heavily worked, if not exhausted, so that the timber for export had, year by year, to be carried over longer distances before it reached the sea.

As to the non-European countries, the only exporting countries of importance were the United States of America and Canada. The total net exports very nearly balanced the net imports of European countries. Australasia had as yet large stores of timber, which consisted, however, chiefly of hardwoods. A certain quantity of it was exported, but she imported so much pine and fir that a balance was shown against her. The United States were working with a heavy deficit as compared with production, so that they had, in steadily increasing quantities, to draw on Canada. The gravity of the position had been recognised, and great efforts were being made to guard against a future timber famine in that country. Instruction in forestry was being given at three universities and some forty other educational establishments; State forests were being created at a rapid rate, and even private forest lands were brought under systematic forest management. Canada had as yet great stores in its 266 million acres of real timber lands, especially of coniferous timber. If the authorities in these self-governing colonies could be induced to introduce systematic management into the more important forests, that country might for ever supply the rest of the world with the necessary coniferous timber. Some mild efforts had been made by the Governments, and even forestry societies started, but the interests of the lumber trade were very great and powerful, and in the meantime the destruction of the forests by reckless cutting and fires went on. On the whole, then, the following conclusions seem justified: (1) We require enormous and ever-increasing quantities of timber; (2) Prices are likely to be higher in the future than they were in the past; (3) Supplies from outside rest on a very unsafe basis; (4) An increase of the woodlands in this country, if brought about by the afforestation of surplus lands, will keep a large amount of money in the country, and lead to an increased demand for labour in the establishment and management of such woodlands, and it is likely to cause the development of additional industries which use wood as their raw material.

As to the measures to be taken in the United Kingdom, 63 per cent. of the land of the United Kingdom was used for crops and grass, 4 per cent. were woodlands, 20 per cent. mountain and heath land, and 13 per cent. other lands. The latter included, in the case of Ireland, 1,124,111 acres of turf bog and 428,662 acres of marsh. The area of woodlands, 4 per cent. of the total area, was smaller than that of any other European country except Portugal. Again, only some 67,000 acres, equal to 2¼ per cent. of the British woodlands, belonged to the State, or rather the Crown, a percentage which was smaller than in the case of any other state. In France the percentage was 12, in Norway 12, in Sweden 27, in Austria-Hungary 12, in Germany 33, and in Russia 61. Considering all these matters, he believed he was justified in saying that an effort must be made to increase the area under timber in this country. Even apart from the 9¾ million acres of so-called other lands, about which it was difficult to obtain detailed information, we had over 15 million acres of mountain and heath land to select from. A large proportion of these lands were used for light grazing and as shooting grounds, but he was satisfied that their average rental value was not more than a shilling an acre. Even the best of them rarely gave more than half-a-crown, while there were millions in Scotland and Ireland which gave only a few pence a year per acre, or nothing at all. It was easy to show that a large proportion of these lands could be made more remunerative than they were at present, even allowing compound interest, at a reasonable rate, on all outlay.

It was sometimes said that home-grown timber was of a quality inferior to that of the timber now imported from abroad. This was, to a very large extent, a fallacy. The late Forestry Committee had abundant evidence that we could, and did, produce timber of a quality at least equal to that imported in the case of oak, ash, and larch. As regards Scotch pine and spruce, frequently an inferior quality had been produced, because the trees were given too much growing space, and in consequence laid on too broad annual rings. Proper sylviculture could remedy this. On the other hand, the imported timber of nearly all species came to us in pieces which were larger, straighter, and more free of knots than the ordinary home-grown timber. This was again due to faulty sylviculture in our own woodlands. Too heavy thinnings and too much growing space to the individual tree while young accounted for this. If we treated our forests as forests were treated on the Continent, we should produce just as fine timber, for our climate was admirably suited for it. What we required were improved sylvicultural methods, and the late Forestry Committee pleaded, in the first instance, for improved instruction in forestry. He was happy to say that this recommendation had already borne fruit. A special forestry branch had just been added to the Royal Agricultural College at Cirencester; a similar branch was about to be added to the Kent and Sussex Agricultural College at Wye—both for the instruction of landed proprietors or their sons, or young men preparing for the position of estate managers. A forest school for woodmen had just been started by the Commissioners of Woods in the Forest of Dean. Instruction in forestry had for a series of years been given at the University of Edinburgh, and there was every prospect of that branch being considerably enlarged.

Not all the 15 million acres of mountain and heath lands were suitable for successful afforestation, but he thought he was justified in saying that notless than one-third, and probably a good deal more, was suitable to be put under timber. Assuming that such land yielded all round an annual rental of half-a-crown an acre, its value, at thirty-two years' purchase, might be placed at 4*l.* an acre. "Supposing we plant, say, 1,000 acres with either larch, ash, Scotch pine, spruce, or oak, let us see what the financial results are likely to be in each case. Here we must, of course, start with certain data, and these I have collected with the greatest care from actual results, but keeping always on the safe side, so as to introduce into the amount the *minima* of returns which may be expected. . . . It will be found that a proprietor will get compound interest on his outlay at the following rates:—In the case of larch, 4¾ per cent.; ash, 4¼ per cent.; Scotch pine, 3½ per cent.; spruce, 3¼ per cent.; oak, 2¾ per cent. If the land costs more than 4*l.* an acre the proprietor will get less than the above-mentioned percentages. Let us say the land costs 6*l.* an acre, then he will get:—In the case of larch, 4½ per cent.; ash, 4 per cent.; Scotch pine, 3¼ per cent.; spruce, 3 per cent.; oak, rather more than 2½ per cent. As land of the class here under consideration is not likely to cost more than 6*l.*, it is clear that it will pay to grow timber on it. In many cases the land can be obtained for less than 4*l.*, when the percentages will be higher than those first mentioned. This will hold good in the case of mountain and heath land in Ireland, and frequently also in Scotland."

There remained, however, one great difficulty, and that was that the bulk of the surplus lands was private property. In some cases the proprietors were not inclined to plant, and in others they were hard up, and could not afford to meet the initial expense of planting or forego the present small income from the land until the plantations commenced to yield a return. The question thus arose, What could be done to overcome the difficulty? There were various ways of meeting the case:—(1) The State might encourage afforestation by private proprietors, by providing the means of education in rational, economic forestry, and by making advances at a low rate of interest to proprietors who are short of cash; (2) The State might acquire surplus lands and afforest them; (3) Municipalities might acquire surplus lands and convert them into communal or corporation forests.

All three agencies ought to be put into motion, but as matters were we must look chiefly to the first one. It seemed to him of the utmost importance that arrangements should be made to give advances to landed proprietors, who were willing to plant but unable to meet the initial expenses, at the rate of interest at which Government could borrow, plus a suitable addition by way of a sinking fund.

From time to time suitable tracts of land come into the market, and there was, in his opinion, no reason why the State should not acquire such land. On the whole, cases of that kind were comparatively rare in England, but probably more numerous in Scotland. In Ireland, however, the State could do something substantial in connection with the carrying into effect the latest Irish Land Act. Many of the estates, especially in the so-called congested districts, contained large areas of waste land which were not required by the new proprietors. Such areas might be acquired by the State and converted into State forests. The price of such land would probably be less than 1*l.* an acre.

In reference to municipalities as proprietors, he maintained that afforestation offered one of the means of solving the unemployed question. The bulk of forest work could be done at those times of the year when the question of the unemployed was most pressing, and why should not this great city, even the Carpenters' Company, buy a few tracts of mountain land, where forest work could be given to the unemployed during winter? It was true that extensive tracts of surplus land could not be found in the immediate vicinity of London, but railway communication was so complete that a moderate distance did not make much difference. In the case of Surrey, Kent, and Sussex, out of the 36,502 acres of mountain and heath land a few thousand acres might be acquired. On this area he should start planting on a small scale under an efficient superintendent, so as to train a small establishment to the work. The men so trained would subsequently act as foremen. When pressure came in winter-time in London, the unemployed would be sent to the estate and employed in preparing the land for planting, by draining, fencing, and digging planting holes, on such a scale that sufficient work was provided for the men until hard times passed and they could return to their ordinary occupation, a certain number perhaps being retained to do the actual planting. Towards spring the staff of workmen would be reduced to its permanent strength, which would be busy with nursery work during summer and autumn. In many cases operations of this class might be combined with the utilisation of catchment areas for waterworks. If afforestation were undertaken on a large scale, there was no reason why 5 or 6 million acres should not gradually be brought under wood, thus producing the bulk of the ordinary timber required by the country. Every acre afforested would require an expenditure on labour of, say, 2*l.* for planting. After the forests had been established, every acre would require about five days' labour a year, or a total of 30 million days for the work in the forests. Then there was the large business of transport and working up the timber, as well as the various industries which would spring up. On the whole he estimated that a population of not less than 2½ million people would find additional work in the country, counting five members for each family.

On the motion of the Chairman a hearty vote of thanks was accorded to the lecturer, and a vote of thanks was also passed to the Chairman.

Mr. N. Smith, past Master of the Company, said that the Company, recognising the importance of the subject, recently offered prizes for essays on forestry, and they had made the following awards:—Winner of the first prize (20*l.*), Mr. A. C. Forbes, of Longleat, Warminster; winner of the second prize (10*l.*), Professor W. R. Fisher, Cooper's Hill Engineering College.

The following essays were very highly commended—Mr. T. Berwick, of Raby Estate Office; Professor G. S. Boulger, Richmond; Professor C. E. Curtis, Brockenhurst; Mr. R. G. Forbes, Hursley Park; Mr. A. P. Grenfell, Bridgwater; Mr. R. Henderson, Gortland Estate Office; Mr. G. N. Macdonald, Raith Estate Office; Mr. A. E. Moeran, Portumna, Galway; Mr. A. Murray, Paultons, Romsey; Mr. Osmond Smith, Southsea; Mr. Leslie Wood, East Grinstead.

The meeting then terminated.

The Workman of the Middle Ages.

The third lecture of the series was delivered on Thursday last week, when Mr. C. R. Ashbee, M.A., gave an address on "The Workman of the Middle Ages," the Right Hon. Viscount Dillon, P.S.A., presiding.

Mr. Ashbee said there were three essential points which, in studying the life of the middle ages, we had to keep in mind—three pivots on which life hinged. Life in the middle ages was aristocratic, religious, and artistic. Those three conditions were so outside our experience nowadays that we might find difficulty in fully realising them. As to life being aristocratic, the feudal system, with its barons and kings at one end and its serfs, who were tied to the soil, at the other, implied an aristocracy. In order to appreciate what sort of a man the mediæval workman was it must be remembered that he belonged to an exclusive society of his own, girt round with charters and privileges—a society democratic and collectivist within itself, but exclusive and often impossible of access to the outside world. As to life being religious, he meant that the conduct and actions of men were swayed by supernatural and ultra-rational considerations in a way that it was difficult for us to realise nowadays. The England of the XIVth century had only one God for everybody, and the outward and visible expression of that God was the Church. Finally, life was æsthetic, which implied an understanding and an enjoyment of all those qualities in our natures that were the outcome of leisure and imagination—the love of music, the love of form, the love of colour. This æsthetic element of life found its highest expression in architecture—in the art of the ecclesiastical builder. The best men, the greatest minds, the finest genius of the workshop (at least, in England) went into building. Everybody understood and appreciated, for it was the popular art. It was impossible to find a parallel in our own time, because modern interests were so manifold and varied; but if we imagined that everything that had to do with letters and reading had been effaced from our lives—newspapers, books, lectures, etc.—and that building had been substituted for it—building, with its subordinate arts, its sculptured and painted stories, its stories in metal and carved wood, and stained glass—we should get some slight notion, perhaps, of the absorbing importance of the builder's art in the English middle ages. The builder's art was the great occupation, and the Church upon which it depended, and which it expressed, was the great profession. In his picture, then, of the mediæval workman he made him a mason, because not only was that the popular occupation, but the mediæval mason in England had, before all other workmen, left the noblest mark of himself, and other trades and occupations ranked themselves beside, and modelled themselves upon, the masonic organisation. England was then thinly populated, with here and there what we should call villages surrounded with walls. Those were the mediæval towns, and inside each little town was a little democracy which, speaking generally, hinged upon the guild or trade union. It was really much more than a trade union—it exercised all those functions exercised to-day by magistrate, employer of labour, town council, labour bureau, union, factory inspector, benefit club, schools, burials, etc. There might be one or there might be many guilds in a town—that depended on its size—but every able-bodied citizen belonged to some guild or other, and those guilds were for the most part religious in character, and as the towns grew they differentiated into trades. The guilds collectively governed the towns by representation. Of course, nothing like our great factories existed. The workshop was small, and the master worked in his apron together with his two or three journeymen and his two or three apprentices, who also did him personal service, and both apprentices and journeymen could in their turn become masters. The different masters represented their various workshops in the guild, the guild legislated for the whole trade or group of workshops, and the different guilds together governed the town. The idea of all was the maintenance of the highest standard of life to the citizen. Roughly speaking, this was the industrial organisation of the English town in the middle ages, and that organisation was one of spontaneous growth; it was dependent for its effectiveness upon the power of the citizens for voluntary association.

The lecturer then gave an interesting account of a masons' guild. The character and genuineness of workmanship was the guild's first consideration, and the first of the moral rules was the character and trustworthiness of the craftsman. The master's duty to the whole organisation was a point insisted upon, as well as the seven years' apprenticeship and the master's duty to his apprentices. The organisation had no fixed quarters; they moved about from place to place. Co-operation and competence were also insisted upon, and the workman's duty to his master. The dominant note of the mediæval workshop was that no one should do anything that would turn the craft to shame. The mason was the spoilt child of the middle ages; he worked for his order and his God. There was no fight for subsistence, that was found him; there was no fight with time, that was non-existent. Were the work not finished this year, it might be finished the next—good building could not be hurried.

The lecturer described the system under which the mason worked, and said that an observance by the workman of the code of moral rules called forth certain definite traits, such as reverence, strength and virility of character, discipline, æsthetic sensibility, the faculty for co-operation, and the consequent power and determination of resistance to any attempt at an attack on the liberties of his town or his order. But by the guild system the work was everything, the man nothing, and yet this went to the building up of noble character.

The lecture, which was illustrated by limelight views, included some interesting particulars of Henry Yevele (who built the Charterhouse), William of Wickham, and Nicholas Close.

THE INSTITUTE OF SANITARY ENGINEERS:

WATER CLOSETS: THEIR SANITARY CONSTRUCTION AND MAINTENANCE.

A SESSIONAL meeting of the Institute of Sanitary Engineers was held on the 2nd inst. at the rooms, No. 19, Bloomsbury-square, when Mr. G. W. Chilvers read a long and interesting paper on "Water-closets: their Sanitary Construction and Maintenance." Owing to pressure of other matter we are not able to give more than the following extracts from the paper:

"The last twenty years has witnessed vast improvements in water-closet apparatus. The old pan closet, with its D trap, is almost extinct; another kind which is, happily, being wiped out of existence is the old hopper closet, with its accumulation of filth on the inner surface and its dribbling supply of water.

"The first improvements on the above were the wash-out and plug closets. They were undoubtedly better than the older kind. But the accumulation of filth behind the basin in one, and round the plug in the other, and the impossibility of cleansing the trap with any reasonable amount of water, led sanitary engineers to devise the modern wash-down and valve closets. There are many variations of these in use and on the market, and improvements on them are constantly being made. They, however, remain the two principal kinds in use to-day.

"Omitting, for the moment, the valve closet, it may be said that all forms of water-closet requiring an enclosure ought to be barred from use by a by-law enforced in all districts. The pedestal wash-down closet in one piece of earthenware is without doubt the best kind of water-closet for all ordinary purposes; in fact, in my opinion, for all purposes. This closet is made in great variety, and under many different names. It would be invidious to mention any particular one at this time. I have no doubt you each give a preference to some particular pattern. To our younger members it may be well to say, do not be led away by any advertisement or description of a closet, especially a new one. Test them under varying circumstances for yourselves. Some will act under certain conditions better than others. When you have satisfied yourselves on the matter, stick to the kind you prefer. If you value your client, give him an article which has experience behind it. Let others try the experiments.

"A good pedestal closet is true in form, with an even and impervious surface, shaped so that the excreta drops clear of the sides into the water, has a large surface of water in the basin, a seal of about 2 in., the flushing rim so arranged that every part of the basin is cleansed during the flushing operation. The water directed in such a manner that its full force is brought to bear on the solids in the pan, forcing them into the trap at the commencement, so that the remainder of the flush may drive them through the drain.

"There are certain of these closets on the market which, especially with a three-gallon flush, create a perfect maelstrom in the basin. The ordinary observer remarks the force of the water and thinks what a fine apparatus he has. The more intelligent student would, however, notice the paper and excreta being whirled about the basin, and then, just in the last effort of the flush, being carried out of sight. It is evident that in such a case the trap is never properly flushed until the next operation of the apparatus.

"The outside of a pedestal closet should have an even surface, without the projecting ornaments often seen on them. Colour, white, both inside and out. In fact, there is no better finish for all surfaces in sanitary offices than white enamel of good quality, which is easily washed and shows up at once any accumulation of dirt.

"Of the many improvements on these closets

the syphonic is no doubt the most conspicuous, the principle being, as you are all aware, to *draw* out the excreta from the basin by syphonic action, instead of forcing it out as in the former case. The advantages seem to be, greater force in flushing, and in most cases a double seal through the use of two traps to get syphonic action. The disadvantages are, greater cost, more noise in flushing, and they generally require at least three gallons of water to make them act properly. With regard to the flushing cisterns used in connection with pedestal closets, it may be well to say at once the simplest are generally the best. Sanitary engineers are apt to forget that these cisterns are not operated by experts in the ordinary course, but by the general public. They should, therefore, be simple in construction. Act at once with an easy pull of the handle, and the necessary parts so put together that there is nothing to get out of order with fair usage. The flushing pipes are an important item in obtaining a good flush. Their size, of course, varies with the height of the cistern above the basin. Generally speaking, all bends are to be avoided as much as possible, particularly sharp ones, and where they do occur the bore of the pipe must not be diminished. Manufacturers are always ready to lay any failure of their apparatus on to the bad method of fixing, doubtless in many cases with good reason. It should, therefore, be the endeavour of the sanitary engineer to see that all apparatus is fixed to secure the full advantages that may be obtained.

"The seats should, of course, be of hard-wood polished. There are objections raised to the use of pedestal closets in some cases, one or two of which may be noticed briefly.

"The principal one appears to be that they are noisy in action. This difficulty is not altogether insuperable, even with present-day apparatus, and there is no doubt that continued improvements will reduce the unavoidable noise to a minimum. That from the re-charging of the cistern has already been overcome by silent action ball valves, and the use of storage cisterns from which to draw the supply. That caused by the flushing action cannot altogether be obviated. It only continues for a few seconds, however; and is, or should be, only perceptible to the operator, if the walls are constructed as previously described, and the advantage accruing through the force of the flushing is much greater than any little disadvantage from the noise. . . . .

"The valve closet now demands our attention. It still survives. Whether it is a question of 'the survival of the fittest' is also a question. Some of the advantages in its use, from a sanitary point of view, appear to be—greater area and body of water in the basin; double seal of basin and trap; noiseless in action; absence of pipes and flushing cistern, and the enclosure to receive draperies and give support. The disadvantages are:—Much greater cost; enclosed mechanism to get out of order, and harbour dirt, and retain effluvia; less force of flush; the joint between soil pipe and apparatus is out of sight and is generally made with red lead; liability of the pan to become empty through valve leaking from matches, cigar ends, etc., getting on the seating.

"Wherever water-closets are fixed for the use of the general public, and in all business establishments, the pedestal closet is admittedly the best. For dwelling-houses, æsthetic people prefer to see a piece of cabinet work enclosing the apparatus. Sanitarians advocate free access to all parts for cleansing purposes, and do not regard the water-closet as a piece of drawing-room furniture. If a valve closet *is* used, let it be one of the pedestal kind, which has all the advantages, while it reduces the disadvantages and can also be used as a urinal."

As to the flushing of water closets, the author gave the views of sanitary engineers, and also of the water companies, and concluded as follows:—

"Such being the case from both sides, what can *we* do to alter the matter? As far as the London district is concerned, an exceptional opportunity is presented to us just now—and, on the face of it, a more favourable one than has occurred at any previous time during the last thirty years—of laying the claims of the public health before a new Authority. Reference is, of course, made to the new Metropolitan Water Board. In taking over the concerns of the existing Water Companies, no doubt new regulations affecting the supply of water to consumers will be issued. In making them, due regard will be had to the *efficiency* of the supply.

"As the Board are a public body they will, while economising their resources, doubtless let the accent be on the efficiency in the interests of public health. Therefore, if a well-considered memorial were laid before them on the subject of flushing water-closets, there is no doubt it would receive the fullest attention by them. What more suitable body of gentlemen could be found to present this petition than the Institute of Sanitary Engineers—consisting as it does of men actively engaged in designing and constructing these conveniences, and therefore well able to appreciate the present difficulty, and to lay the claims of the public health before the Board in both a practical and scientific form? We ought not to let this opportunity pass—in fact, the Council of the Institute ask you to-night to unanimously carry a resolution authorising them to approach the Board, asking that the present limit of a two-gallon minimum supply to water-closets may be withdrawn in favour of one more in accordance with the requirements of present-day sanitation, pointing out that the *efficiency* of water supply to closets is in the interest of public health, as well as efficiency of supply for other purposes; also that an anomaly exists in the fact that an *unlimited* supply exists for bath and lavatory, which may be used as many times each day as desired. Yet a water-closet which a person only uses about once or twice in the same time is limited to two gallons. Should your efforts be successful, as I sincerely hope they will, you will deserve and obtain the thanks of all concerned for the public health, and have assisted materially the advance of hygiene."

THE BUILDERS' ACCIDENT INSURANCE, LIMITED.

THE twenty-third annual general meeting of the Builders' Accident Insurance, Limited, was held at 31 and 32, Bedford-street, Strand, W.C., on the 2nd inst. In the absence of Colonel Stanley G. Bird, C.B., through illness, the chair was taken by Mr. Frederick J. Dove.

The minutes of the last meeting having been read by the secretary, Mr. R. S. Henshaw, and confirmed, the secretary read the Report and accounts for the past year. The Report stated that during the period under review, the company has received notice of 1,200 accidents, an increase of 163 on the previous year. The Board had satisfaction in recording an increase of 1,583*l.* in premium income, and also an increase of 20 per cent. in the number of policyholders.

"The question of those claims for permanent injury cases under which half-weekly wages were being paid—many of which had continued for a considerable period—was referred to at the last meeting, and a strong opinion expressed of the desirability of discharging those liabilities by the payment in each instance of a lump sum. This policy had been acted upon, and the Board have been able to deal with the majority of such cases at less than the amount allocated for the purpose. Although this necessarily increases the item of claims as appearing in the balance-sheet, the directors feel confident that the consequent reduction of the company's liabilities must be no less satisfactory to the members than it is to themselves.

"The experience of the Board during the past year has shown that the company must expect in the future an ever-increasing number of claims which, though small in themselves, involve a large amount of detail work by the staff, and, in the aggregate, a considerable monetary compensation.

"The investments of the company had been taken at the present depreciated values, which, with the causes mentioned in the foregoing paragraphs, accounts for the somewhat reduced figures standing in the balance-sheet to the credit of the reserve and unexpired risks.

"Reference was made in the King's speech to a proposed amendment of the existing Acts, and the directors await the proposals of the Government in this direction with much interest, and as a Departmental Committee of the Board of Trade is now collecting evidence upon the working of the Acts, the chairman has placed his views on this subject and the experience of the company so far as the building trade is concerned before the Committee. . . .

The secretary then read a speech by Colonel Stanley G. Bird, the Chairman of the company, in which the report of the auditor, Mr. Chas. Fox, chartered accountant, was included. Colonel Stanley Bird said he must congratulate the company on its highly satisfactory condition, notwithstanding the apparent shrinkage of the funds. The fact was they had now settled up the bulk of their outstanding and long-standing claims, for considerably less than they had anticipated. They had estimated in the same liberal way for extinguishing those still outstanding, and for the current year, and he was sure, as wise men of business, they would cordially approve of this policy. As to the depreciation of the investments, they were suffering in the same way that every one throughout the world is. He hoped they had touched bottom at last, and that in due time affairs would recover; the securities would then, he hoped, rise in a corresponding proportion. It would be a matter of satisfaction to the members to see the increase in the premium income and in the number of policyholders, particularly as several insurers of old who left them had returned, and that the bulk of the new business which had been received by the company had been introduced by existing policyholders. There had, during the past year, undoubtedly been a great depletion of trade, and the company had consequently suffered to some extent. The law also was becoming better understood by workmen, the officials of Trade Unions, and solicitors generally. It had been his duty as representing the company, and also having regard to the very important industry which the company represented, to give evidence before the Departmental Committee appointed by the Home Office to inquire into the working of the Workmen's Compensation Act, 1897, and the Employers' Liability Act of 1880. In the course of his examination he explained and elaborated as much as possible the effect of the Acts in practice, particularly with regard to the height of buildings. The question also of scaffolding and the true definition thereof was fully placed by him before the Committee. He also pointed out the desirability of having the duties of the medical referee more clearly defined, and of notice being given immediately in the case of an accident. He might mention for the information of members that it was the policy of the directors to deal with all claims as far as possible as they arose in a fair and liberal spirit, which the directors believed met the satisfaction not only of the policyholders, but also of the injured workmen.

On the motion of the Chairman, seconded by Mr. H. H. Bartlett, the report and accounts were received and adopted.

The following directors were then re-elected:—Messrs. Thomas Barnsley, Woodman Hill, A. Krauss, William Nicholson and G. H. Trollope, and fees for their services were also agreed to.

On the motion of Mr. T. F. Rider, seconded by Sir John Mowlem Burt, Mr. Charles Fox was re-elected as auditor.

Sir John Mowlem Burt moved that an expression of regret be conveyed to Colonel Bird at the cause of his absence; and also a vote of thanks to Mr. Dove for presiding.

Mr. J. Howard Colls seconded, and the motion was agreed to.

The Chairman replied, and the meeting terminated.

THE SURVEYORS' INSTITUTION:

THE LAND PURCHASES FOR THE NEW NAVAL BASE AT ROSYTH, ON THE FIRTH OF FORTH.

AN ordinary general meeting of the Surveyors' Institution was held on Monday evening at No. 12, Great George-street, Westminster, S.W., the President, Mr. A Buck, in the chair.

The Secretary, Mr. Julian C. Rogers, having read the minutes of the last meeting,

Mr. Percivall Currey, Hon. Secretary, read a list of donations to the library and library fund, and, on the motion of the Chairman, a vote of thanks was accorded to the donors.

Mr. Thomas Binnie then read a paper entitled: "The Land Purchases for the New Naval Base at Rosyth, on the Firth of Forth." Having mentioned that in the early months of last year the Admiralty decided that a new naval base should be established upon the north shore of the Firth of Forth, a short distance from the Forth Bridge, he said that, along with Mr. J. Campbell Murray, factor and commissioner to Sir John Stirling Maxwell of Pollock, he was asked by the Admiralty to advise them in connexion with the acquisition of the necessary land. A naval base in the Firth of Forth would be no new thing; it would only be a return to the state of matters which prevailed long ago, for when Scotland had a navy of its own, it was in the Firth of Forth that the ships were built. The site selected for the new naval base consisted of two properties: (1) The Barony of Rosyth, belonging to the Marquis of Linlithgow, and (2) the estate of Castlandhill, belonging to Mr. R. N. H. Newton. These two properties extended in all to about 1,463 acres, of which 1,178 acres were dry land, and 285 acres were foreshore, *i.e.*, land covered by the sea at high-water of ordinary spring tides. The eastern boundary of the lands was about one-third of a mile west from

the Burgh of Inverkeithing. They extended along the shore for fully two miles, and their greatest breadth backward was fully a mile and three-quarters. Generally the lands were gently undulating, but at two points they rise to a height of fully 200 ft. above sea-level. On one of these points there was a small reservoir belonging to the local authority, which was likely to be greatly enlarged to supply the naval works. On a small promontory, which became an island at high tide, there stands the ancient Castle of Rosyth. The castle consists of a tower or keep, measuring 48 ft. 6 in. by 41 ft. 3 in., and four stories in height. It seemed to have been built during the second half of the XVth century, and at a somewhat later date a number of additional buildings of two stories were attached to its eastern and northern sides. The walls of the keep were almost entire, but the other buildings were ruinous. In front of the property was St. Margaret's Hope, the well-known anchorage in which the vessels of the Royal Navy had usually lain when visiting the Forth.

A branch of the North British Railway passes within less than one hundred yards of the north boundary of the property bought, and the levels were such that a siding could very easily be constructed to connect the naval works with the railway system of the whole Kingdom. They would in this way also be brought into touch with the great Fife coalfields, which were now being so rapidly developed. The total rental of the two properties bought amounted to 1,623*l.*, and the purchase money amounted to 122,500*l.* As was usual in the compulsory purchase of land, the minerals in Roysth were reserved by the seller. These had now been purchased, and their value had been fixed by arbitration at 12,250*l.* more.

The lecturer then made a statement of the facts which led to the payment of what appeared, on the face of it, to be an excessive price, in the course of which he explained that in Scotland when agricultural land was taken compulsorily the value was almost always fixed at 30 years' purchase of the fair rental, and to that 50 per cent. was added for compulsory sale. When building land was taken compulsorily, only 10 per cent. was added to the price. Throughout all the negotiations for the purchase of the land at Rosyth these transactions were treated as being in fact compulsory sales. Neither property was in the market for sale, and the owners were unwilling sellers. In all the estimates of value offered by the critics of the Admiralty, no value appeared to have been placed upon the woods and woodlands which extended to more than 50 acres. The wood was of little commercial value, but the value of the woodlands was an important element in estimating the value of any property. On Castlandhill there was a charmingly situated small mansion house, which, with the offices and lodges, could not have been built for less than 7,000*l.* This house, with a garden and pleasure-ground, was let at a rent of only 68*l.* Castlandhill, which gave its name to one of the estates bought, was a very steeply-sided hill of whinstone, which rises to a height of more than 200 ft. This whinstone is of considerable value. A number of quarries are working in the immediate neighbourhood. The owner of Castlandhill undertook that, before letting any of his remaining rock to any other person for the purpose of opening a sale quarry, he should first offer it on the same terms to the tenant of the existing quarry. This obligation rested upon the Admiralty. But it was expressly declared that the Admiralty may quarry as much of the rock as they please for Government works, for road-making, and for the erection of dwelling-houses and other buildings on Government lands. All restriction upon the use of the rock ceased in 30 years. This was a most important consideration. The mass of rock in Castlandhill was enormous, probably not less than fifty millions of tons. The quality appeared to be quite as good as that found in the neighbouring quarries, for which there was paid a lordship of 6d., and even 9d. per ton, for all kinds of dressed stone, and 4d. per ton for marketable road metal. Castlandhill was close to the sea, and a pier or jetty from which to ship the stone could very easily be constructed. Large quantities of whinstone quarried on the adjoining lands were shipped every week to England. Indeed, we were told that the Admiralty are very large customers of one of the quarry-masters. They would now be able to supply themselves with all the road metal and whinstone sets which they required in all the dockyards in Britain, if they chose to do so. But the chief value of the rock to them would be in connexion with the construction of docks, and the erection of buildings upon Rosyth. The possession of such a quantity of rock in the immediate neighbourhood of the proposed dockyard would be of immense value to the Admiralty and their contractors, and should greatly reduce the cost of the proposed works. On another part of the property purchased there were more than 30 acres of sandstone rock, lying in practically level beds and with very little cover. The Castle of Rosyth had been very largely built of this rock, and its quality might be judged of from the fact that on many of the stones in the castle the tool marks were still visible, and the corners of many of the hewn stones were quite sharp, although the building was considerably more than 400 years old. The Admiralty had purchased not only sufficient land for the largest naval establishment ever likely to be erected on the shores of the Forth, but they had also bought a large area of land on which dwelling-houses would be built for their workpeople. It was believed that 1,000 acres would prove more than sufficient for all the requirements of the naval base. The naval works at the great ports of Chatham, Portsmouth, and Devonport vary considerably in size, but it might be taken that they occupy about 1,000 acres at each place, exclusive of foreshore. At Rosyth there is such a fine bit of foreshore and shallow water that less solid land would be required. It was difficult to imagine that the naval base at Rosyth would ever rival in importance the great establishments in England just named, but if we assumed that 1,000 acres in all would be set apart at Rosyth for the Government works, there would remain 463 acres of land which could be disposed of for the erection of the dwelling-houses, shops, and the other buildings required in a town. It had been stated on behalf of the Admiralty in the House of Commons that they do not themselves intend to erect houses; they propose to feu the land, and to leave the houses required to be provided by builders in the ordinary way. But the future town would, no doubt, be laid out by the Admiralty as ground landlords, and we might expect that care would be taken to provide for the health and enjoyment of the inhabitants, who were expected ultimately to number many thousands. Lord Linlithgow's representatives desired that only the land required for the works proper should be acquired by the Admiralty, leaving to his lordship the land which would be required for dwelling-houses. On the other hand, the Admiralty held that, as their works were to be the means of collecting the population to occupy the houses, to them should belong the profit arising from the erection of these houses. In other words, both seller and buyer claimed the unearned increment which would arise from the creation of a new town. Lord Linlithgow's advisers maintained that the Admiralty had power to acquire compulsorily only the land actually required for the naval works, and in this view they were supported by the lawyers whom they consulted. The Admiralty's advisers, on the other hand, held that the Admiralty could acquire land on which to build houses for their own workpeople. But it was a much more doubtful point whether the Admiralty could compulsorily acquire land which they might intend to sell, or feu, to third parties, who would erect upon it the houses required, not only by Government employees, but also by the shopkeepers and other tradesmen, who so largely made up the population of any town. The ordinary feuing rate for workmen's houses in the outskirts of the neighbouring town of Dunfermline—three miles distant—was from 20*l.* to 25*l.* per acre. One enterprising speculator had already secured some land adjoining that purchased by the Admiralty, and had undertaken to pay more than 50*l.* per acre per annum for it. If only two-thirds of the 463 acres of available building land belonging to the Admiralty were feued at the lowest of these rates—20*l.* per acre—the annual revenue would amount to over 6,150*l.* While interest at 3 per cent. upon the purchase money for the whole property bought, including the minerals, amounted to only 4,042*l.* 10s. If these estimates were realised, the result would thus be that the Admiralty would have a clear income of over 2,100*l.*; the 1,000 acres of land devoted to the naval works would cost them nothing; and they would still have 150 acres of land for parks, playgrounds, schools, or any other public purpose they desired to devote it to, so that Rosyth might indeed be made a Garden City. With all these considerations in view, they felt bound to bring their negotiations for the purchase of the lands privately to a successful termination, although they might require to pay a very liberal price, as undoubtedly was done.

In Parliament it was said that, instead of paying for these lands the sum which was given, the Admiralty should have taken the steps needed to enable them to acquire the land compulsorily, and then left the price to be settled by arbitration. It was at least uncertain that they could have acquired in this way the land on which the future town of Roysth will stand. But assuming that this course was open to them, the question arose, would it have been wise to follow it? Some who had had a great deal to do with arbitrations had come to hold the opinion pretty strongly that the more cases they settled privately the better it was for their clients. The advisors of the Admiralty felt confident that the land purchases at Rosyth had been arranged upon terms which would prove to be by no means unfavourable for the buyers.

On the motion of Sir J. Rolleston, M.P., seconded by Mr. J. H. Sabin, a vote of thanks was passed to the lecturer.

It was announced that the next meeting will be the second of the two afternoon meetings arranged for the convenience of country members, and it will take place at four o'clock on March 21 instead of April 18. The discussion will be resumed on Mr. H. J. Elwes' paper on "British Timber and its Uses."

The meeting then terminated.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

IV.—SAVOY HOTEL AND NEW FLOWER MARKET, COVENT GARDEN:

THE Savoy Hotel is now undergoing considerable enlargement and development. The Architectural Association was afforded an opportunity of inspecting the new works by the permission of the architects, Messrs. Collcutt and Hamp, on Saturday, March 5, when a large body of members attended this, the fourth visit of the session. In the absence of Mr. Collcutt, who has long been associated with the hotel, Mr. Hamp kindly undertook the duties of conducting the party to the numerous departments, and gave information upon the complex nature of the problem in hand.

The key to the whole scheme is the providing of an entrance to the hotel direct from the Strand, and in order to achieve this, it became necessary to acquire large properties facing that thoroughfare, the rebuilding of which is the subject under notice. The widening of this part of the Strand by the Westminster City Council was an element affecting the areas of the site, and necessitated setting back the new fronts 19 ft. from the old building line. We published "Notes," giving some historical information of the disappearing buildings, on October 26, 1901, and on the question of the compensation in our issue of February 8, 1902. The old-established restaurant known as "Simpson's" was included in the demolitions, and is now re-erected.

A new 40 ft. roadway, occupying approximately the position of an old street called Beaufort-buildings, has been constructed from the Strand level and approaches a covered court, from which access is obtained through the new entrance to the hotel now called for convenience the "south block"; the buildings on either side of this road and facing the Strand are termed "east" and "west" blocks respectively. The new levels involved an alteration to the side entrances of the Savoy Theatre.

The south block, intended wholly for hotel purposes, contains on the ground floor a large entrance hall, from which a flight of steps leads down past a vestibule and lavatories to a large foyer now at the same level as the well-known restaurant overlooking the Thames Embankment. This foyer is practically an enlargement of the dining-room formerly overlooking the fountain court, an illustration of which we gave on July 11, 1896, so that the entrances to the hotel are now given greater dignity and importance. The rapid fall in the streets towards the river produces a large amount of basement space, which appears to have been fully utilised. New kitchens and service-rooms have been built below the Hall, the staff dining-room placed under the new courtyard, and refrigerators, ice-making plant, etc., are provided below the

new roadway. The kitchen, the vital part of all hotels, is therefore centrally placed for all hotel demands and for the purposes for which it will be required in the east block. In a sub-basement, and level with Salisbury-street, are placed a heating and electric-generating plant and a motor garage.

The east block is the largest of the three divisions, and comprises a variety of business and residential premises.

On the ground floor, and in connexion with the hotel, is a large Parisian café, one side of which opens to the covered courtyard, an independent approach being also provided from the new roadway. The remainder of the frontages consists of shops, an entrance to the upper floors, and entrance leading to Simpson's restaurant, the gentlemen's dining-room of which is on this floor. The smoking-room and kitchens are in the basements. Above the shops are two floors of business offices; whilst the first floor of Simpson's contains ladies' dining-room, chess-room, and Knights' Club room—the meeting place of an old-established institution. The whole of the remaining floors contain small residential suites, consisting of sitting-room, one and two bed-rooms, bath, etc., and the eighth or top floor is arranged as staff-rooms. Provision is made for serving meals to the suites when required, but it is anticipated that the café will cater for most of what is required.

The west block will be given up entirely to shops and offices. At the time of the visit the steel framing of this part of the work was very little higher than the ground-floor. The east and south blocks were roofed in and nearing completion.

With regard to the construction, it should be borne in mind that time has been the great factor in the scheme. Until these works were in hand, the Savoy Hotel Company undertook its own building operations, under the organisation of Mr. George Holloway; for the present work, however, a contract was made with an American firm, Messrs. J. Stewart and Co., who have hurried on the buildings by methods very similar to those practised in the United States. Messrs. Dorman, Long, and Co. have supplied most of the steel construction above the ground line. In the formation of the new roadway and sub-basements Messrs. Handyside, of Derby, were responsible for the girder and stanchion work. The buildings are faced with the faience which Messrs. Doulton, the makers, term Carrara ware, and which has a variety of creams and dull buffs in its colouring. The architects have employed flat treatments relieved by oriel windows and two cupolas on the Strand front only. The upper part of the hotel addition has a deep frieze with large figure subjects.

The interiors call for no special reference, and have the effect of having been designed against time. Messrs. Jackson and Sons have supplied a large number of modelled plaster ceilings based on Adam, Louis XV., and other well-worn periods. In the smoke-room of Simpson's restaurant, however, Mr. Bankart has designed and modelled a charming ceiling and frieze, in which a pleasing flat treatment shows an old English influence.

Various marbles are employed in lining walls and piers, in which the colours selected lack interest. In the lavatories, however, some beautiful mosaic lining made by Mr. Rust is effectively introduced. Many patent materials are in use, amongst which Mack's plaster slabs for internal partitions were the most noticeable. The heating arrangements are necessarily of a complex nature, and a new feature is the use of "thermostats," or self-regulators, fitted to the radiators. It was apparent to the visitors that much in the nature of special permission had been obtained from the local authorities, as amongst other details it was seen that all the soil-pipes, bath, and lavatory wastes were fixed inside the building, to the advantage of the exteriors.

At a late hour a small number of the visitors assembled in Covent Garden to examine the new foreign flower market now nearing completion from designs by Messrs. Lander, Bedells, and Crompton. The last-named gentleman kindly conducted the party through the new building, and gave, in addition, much useful information. Here is a well-designed addition to the many buildings which are comprised in this important market centre. A strong rendering of the later English Renaissance in brick and stone, characterises the general design. The market proper is placed on the first floor, below which is the usual open space, the area of which is considerable.

Importance is given to the four angles of the building in which staircases and lifts are located, and which rise as square pavilions crowned by small lead domes. Intermediate piers of glazed brickwork carry the girders of the superstructure, and it is noteworthy that the honest purpose of the construction is everywhere revealed. Some broad effects are obtained from masses of red brick facing. The detail is satisfactory throughout, and, indeed, as an architectural conception, the inclusion of this building in the afternoon's work was felt to add materially to the success of one of not the least of the means of instruction which the Architectural Association provides.

ARCHITECTURAL SOCIETIES.

LIVERPOOL ARCHITECTURAL SOCIETY.—On the 7th inst. Professor Simpson was the recipient of a silver inscribed inkstand from the members of the Liverpool Architectural Society on the occasion of his resignation of the chair of Architecture at Liverpool University to take up a similar post at University College, London. Mr. John Woodfall, F.R.I.B.A., presided, and in presenting the testimonial to Professor Simpson he paid a high tribute to his personal worth, and endorsed the expressions of the University Council in regard to him. By persistent and energetic effort he had built up a school of architecture, the reputation of which extended far beyond Liverpool, and had attracted students from remote parts of the country. He also secured for architecture inclusion among the courses of study qualifying for University degrees, and obtained due recognition of the degree and diploma from professional authorities. Professor Simpson was President of the Liverpool Architectural Society for two years, and was the first President they had had from the University. He proved a most painstaking President, and the members of the Society, in presenting to him a token of their esteem, trusted he would be blessed with health and success in his new sphere.—Professor Simpson, in returning thanks, said it had always been a source of the keenest gratification to him, that during the time he spent in Liverpool he was on terms of friendship with the architects of the city. By a coincidence his successor, Professor Reilly, was present that evening, and he would ask them to extend to him the same friendship and support which they gave to himself during the nine years he spent amongst them.—Mr. G. Gilbert Scott, joint architect of the Liverpool Cathedral, then gave an address explanatory of the cathedral, and exhibited twenty fine drawings of the building to be erected on St. James' Mount. Mr. Scott said it was, of course, impossible to produce a design which would satisfy all critics, and if they attempted to do that they would succeed in pleasing none. There was no concealing the fact that the proposed erection of a cathedral for Liverpool was epoch-making in the history of English architecture, because they were building a vast church, which in point of size was not equalled by any cathedral church in the United Kingdom, and which would go down to posterity as an example of the architecture during the first half of the XXth century. Much advance had been made during the last fifty years in the architecture of this country, but we were still far from having a distinctive national style. It was little short of a calamity that such a state of things should exist at the present time, for this was undoubtedly a period of extraordinary building activity, which had no parallel in the nation's history. Let them consider the enormous buildings that were being erected throughout the land, upon which vast sums of money had been expended, and to what æsthetic purpose! They would stand condemned in the eyes of posterity by these ghastly blunders, so long as people ignored the fact that architecture was an art and not a business and being so required an artistic nature. The all-important and burning question of style in present-day architecture was constantly being discussed, and when a work of such magnitude as a cathedral was undertaken, the discussion became doubly keen. Those who clamoured for a new style lost sight of the fact that no new style had ever come suddenly into existence and flourished. The whole history of architecture showed a slow and gradual development, and was it likely they were going to alter all of a sudden that which had been the rule for thousands of years? Was there the slightest probability that when a building like the Liverpool Cathedral was contemplated a new and original style would suddenly come into existence—a style which was not only original, but, what was far more important, beautiful? To some the latter seemed only a secondary consideration, and their frantic efforts to attain originality at the expense of beauty would be most reprehensible were it not so pathetic. If they waited until all architects were united in producing a fine national style, Heaven only knew when Liverpool would possess a cathedral. The desire expressed by the committee, but subsequently withdrawn, that the cathedral should be a Gothic building, no doubt influenced many who, like himself, were wavering between the claims of Gothic and those of other styles. Personally, he was not a rabid Goth, and nothing annoyed him more than to hear people remark that no other style approached the beauty of our English Gothic. No one admired and loved this beautiful style more than he did, but to hold it up as the very acme of perfection, in comparison with which all other styles were hopelessly inferior, displayed narrowness and ignorance which were lamentable. Although he decided upon Gothic, he confessed he had dreams of quite another style, or rather the development of a style. But his ideas had not had time to mature, and he preferred until he was older to remain on safe ground rather than court failure by being too previous. Gothic could not go much further. It was nearly at the end of its tether, and before very long would die out as completely as it did in the XVIth century. Whether Liverpool Cathedral would rekindle the flickering flame and prolong its life a few years, or whether this was the last flare-up of the Gothic revival it was idle to speculate. It might mark the end of a notable movement which, if it had not achieved any very great success, had without doubt paved the way for better things. Gothic architecture underwent a process of development lasting over 400 years, which seemed to us with our modern ideas of time a period of extraordinary length in which to make so comparatively small an advance. Was it surprising, therefore, that we failed to get much further in a style that had already been completely worked out? In spite of these objections, however, he decided upon Gothic, because he more or less understood it, and felt tolerably safe. In preparing his design he decided that solemnity was to be its keynote, and this included dignity, grandeur, and simplicity. The whole effect at which he aimed was to be produced by the massing, grouping, and proportion of the various parts, not by prettiness or luxuriance of detail. No amount of rich ornament could, to his mind, equal the beauty and charm of a blank wall relieved by a touch of rich detail. This lack of blank wall was, perhaps, the least satisfactory feature of our fine old cathedrals. In designing a modern cathedral the first thought that occurred was how to treat the central space. He felt convinced that the central space must be so designed as to form the predominating feature of the cathedral, both inside and out, and the planning and designing of this important part was the first difficulty to be got over. He was compelled, however, to abandon the idea of treating a large central space satisfactorily, but he still felt that whatever form the central feature ultimately took, it must, above all things, be the crowning feature of the exterior, so that the eye would be carried up from the less important parts to it, the latter in their turn giving scale and, as it were, supporting the central pile. The actual floor area of the central space, as now planned, was not less than the area of the octagon at Ely, which fact helped them to realise that the space at the crossing was not so small as was commonly imagined. This feature had been the cause of a good deal of discussion, many being under the impression that he had infringed the conditions of competition. There was absolutely no condition that the central space should be large and capable of seating 3,000 persons—there was a suggestion, certainly, but no condition. Some had remarked that the central space would be very dark, but they had evidently not noticed the four windows which opened directly into the central space. The great windows at the end of the tower transepts would play an important part in the lighting of this space. The adoption of the cross transepts in the nave and choir was not decided on merely because the idea was novel, but originated from a feeling that the Byzantine and Renaissance form of vaulting, namely, with domes and barrel vaults, was a far more impressive and dignified way of roofing a space than the

intricate and fanciful, though no doubt beautiful, vaultings of Gothic work. There was a peculiar solemnity and majesty about the dome and barrel form which was entirely lacking in the Gothic, and though he had great admiration, he preferred the simpler and broader treatment. All the mouldings, etc., were being designed by Mr. Bodley, who stood unrivalled as a designer of beautiful and refined Gothic detail. The red sandstone to be used in the Liverpool Cathedral lent itself to large and simple mouldings, and it was fortunate that this stone was especially adapted to a type of moulding which would be thoroughly in character with the rest of the building. The original intention of having a great western court flanked by cloisters had been abandoned owing to the limitations of the site. Unfortunately there was no direct approach to the west end. If they could have arranged a fine road leading from the west front it would have been easy to get such a fine feature as suggested, with steps running the full width of the court from cloister to cloister. Although the site had several faults, it was on the whole a very fine one; it possessed a feeling of romance, which he hoped would be increased when the vast pile was completed. Lack of interest in buildings erected nowadays had been partly responsible for the forced and affected originality which characterised a great deal of modern architecture. A building should be made as interesting as possible, but beauty, which should be the first consideration, must not be sacrificed. In designing the cathedral he had endeavoured to impart a certain amount of interest to the building, taking care not to ignore beauty in order to insert a piece of originality.—On the motion of Mr. E. Kirby, seconded by Mr. T. D. Barry, a hearty vote of thanks was accorded to Mr. Scott for his remarks.

[The above report has been taken from the *Liverpool Courier*.]

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, held at the Royal United Service Institution, Whitehall, on the 7th inst., Mr. D. B. Butler, President, in the chair, a paper was read on "Some Recent Works of Water Supply at Penzance," by Mr. Frank Latham, Borough Engineer and Surveyor, Penzance. After some remarks with reference to the development of water supply works generally, the author proceeded to point out the difficulties which surrounded the question of supplementing the supply at Penzance. There the water rights were restricted, and suitable reservoir sites were not available. An experimental well and adits had been constructed with inadequate results as regards yield. The author described an exhaustive series of observations which he made throughout the neighbourhood, followed by an underground water survey, and the conclusions arrived at. He described at some length the interesting geological construction of the district from carefully-obtained data, which strengthened his former conclusions. The partial failure of the experimental shaft was accounted for and a new well-supply was resorted to with successful results. Some interesting and instructive methods adopted in timbering the shaft through exceedingly dangerous ground were described in detail. The course adopted in steining the shaft with stone was fully detailed. The timbering was so constructed as to afford the greatest possible facilities for gradual removal, during steining operations, effectually guarding against land slips, which otherwise must have occurred. The author next dealt with the construction of the service reservoir which was built on the Hennebique Ferro-Concrete system. He described the principles of this method of construction as adapted to reservoirs. The author claims this to be the first reservoir constructed under the Hennebique patents that had received the approval of the Local Government Board. He attached much importance to the careful gauging of concrete, and to that he attributed much of his success in this and other work with which he is identified. He made special reference to the care required in this respect under varying conditions and in different localities, especially where impermeability was the chief aim. Some experiments made by the author with different concretes were described, and particulars of his experience in the concrete of a defective reservoir were given. The concluding section of the paper dealt with the provisions made for checking the waste of water at Penzance. For this purpose the town is divided into nine districts, each of which is provided with a Deacon water-meter. An ample number of valves are placed on the mains in order to conduct the nightly test. Day and night inspectors are employed, and the successful result has thoroughly warranted the outlay. Pressure-reducing valves have also been provided in some districts where excessive pressure was found to be destructive to mains and fittings. The author considered a complete system of meters should be universally adopted in towns, and he drew attention to the desirability of stop taps on house services being placed in accessible situations outside the premises to afford facilities for obtaining the best results from the meters in reducing waste.

THE JUNIOR INSTITUTION OF ENGINEERS.—At the meeting of this Institution held at the Westminster Palace Hotel, on March 4, the Chairman, Mr. Samuel Cutler, junr., presiding, a paper was read by Mr. G. C. Allingham, entitled, "Notes on Electric Accumulators." After a brief reference to the Edison and other types of cell, the author confined his remarks to the lead storage cell, stating that in stationary cells it was now the usual practice to employ Planté-type positives and pasted negatives; he then discussed the "formation" of the positives, the "shedding" of the peroxide from them, and buckling. The pasting and formation of the negatives were then dealt with, as well as the gradual shrinkage of the active material, and consequent loss of capacity. The older system of building up the plates into "sections" was contrasted with the modern plan of suspending the plates freely in the cells by their lugs, and the advantages of the practice, which is rapidly coming into favour, of "burning" up all the connections on the spot, after the erection of the battery, were pointed out. The importance of arranging batteries so as to provide every facility for attention and inspection was emphasised. Motor-car and other portable cells were next considered. Here the usual practice was to employ light pasted plates, which have a very short life, but which are made as cheaply as possible, and are simply scraped and replaced by new ones as soon as they begin to give trouble. A brief outline then followed of the chemical action in the lead secondary cell, and of the causes of "sulphating" and the treatment of backward cells. The variations of voltage and specific gravity during charge and discharge were discussed, and the author laid considerable stress on the fact that, in his opinion, the gassing is the best indication of the completion of the charge of a battery. Mention was made of the importance of free circulation and diffusion of the acid, and of the consequent failure of all attempts to construct "dry" or "solid" accumulators, and the variation of capacity with the rate of discharge was touched upon. The paper concluded with a reference to the extreme importance of the chemical purity of the materials, not only of those used in the manufacture of the plates, but also of the acid, and even of the water used for filling up. In illustration of the paper specimens were shown which had been kindly lent by the D. P. Battery Company, the Electrical Power Storage Company, and the Tudor Accumulator Company.

THE INSTITUTE OF ARCHITECTS AND ARBITRATION.

WE are requested to publish the following correspondence:—

5, Arundel-street, Strand, W.C.
December 14, 1903.

To the President of the Royal Institute of British Architects, 9, Conduit-street, W.

DEAR SIR,—During the last few years we have been concerned in a large number of arbitrations which have taken place before gentlemen appointed by the President for the time being of your Institute.

It is, we need not say, of great benefit to litigants in the special class of cases which are the subject of such arbitrations to have an arbitrator with technical knowledge and practical experience.

There is, however, one aspect in which the result of these arbitrations have repeatedly produced grave dissatisfaction and, we may fairly venture to submit, grave injustice to litigants.

It has become and is a uniform practice amongst arbitrators appointed by your Institute to direct, whatever be the result of the arbitration, that each side shall bear its own costs and pay one half of the costs of the award. We do not deny that there may be cases in which such an order is fair, but the universal application must produce in many cases grave injustice. You are doubtless aware that in arbitrations conducted before the Official Referee of the Court, or before barristers of the highest standing, the practice is to order that the costs of the litigant who is subtantially successful should be paid by the party who improperly in the event forced litigation upon him. And this practice has a foundation in natural justice.

Suppose the case—a perfectly common one—where A. claims from B., say, 200*l*. B. will not pay, arbitration ensues. A. recovers say 180*l*. or 190*l*. The proceedings have, however, lasted a day or two, and A.'s costs amount to 120*l*. If an arbitrator directs under these circumstances that each side should pay its own costs and half the costs of the award, A., making an honest claim and establishing it, loses perhaps the whole of his profit on a contract, because B. improperly contests his claim.

In a case recently decided by an appointee of the President of the Royal Institute of British Architects, a claim of about 200*l*. was made on a contract of under 1,000*l*. The defendant not only denied liability for the 200*l*., but counter-claimed for about 800*l*., an amount almost equal to the contract figure. Every item was contested by the defendant, and on counsel's advice the plaintiff gave up a number of small items, although he entirely believed in his right to them, rather than multiply expense by pressing them. The case lasted four days by reason of the defendant disputing every item, and by reason of consideration having to be given to the counter-claim, which had no sort of solid basis. The award, after considering claim and counter-claim, found the plaintiff was entitled to 165*l*. —the difference between which sum and the sum claimed was largely made up of items abandoned under the circumstances above mentioned; nevertheless, the usual order as to costs made by members of your Institute was made. This means that the builder, though making a perfectly fair claim, has to derive no benefit from the arbitration, and has to lose his profit on the contract; although the responsibility for litigation having to be resorted to rests with the defendant.

This is not an isolated case. Very many instances could be brought to your notice of a similar description. Nor, we would especially have you understand, are we making any sort of complaint against the particular gentleman who sat as arbitrator in the case which we have instanced. His courtesy and ability and careful consideration of all points raised were most marked. It is the system we venture to criticise.

We have been and are much concerned with building arbitrations. We are not seeking in any way to attack the award in the case which we have mentioned. We feel, however, that the matter is one which we can fairly bring to your notice, and, if you think proper, you might give the subject your consideration, or even invite discussion amongst your members upon it.

We can honestly assure you that the present system is practically rendering useless the otherwise useful and valuable assistance of members of your Institute as arbitrators, and it is because we feel that sufficient consideration may not have been given to it, and that the matter is one of really public importance, that we have ventured to take the unusual course of inviting your attention to the question. Trusting that, in trespassing so largely upon your time, our motives may not be misunderstood, we beg to remain, sir, faithfully yours, BRABY AND MACDONALD.

19, Conduit-street, W.
January 11, 1904.

DEAR SIRS,—I am directed by my Council to say that they have given very careful consideration to your letter of December 14.

Assuming the facts to be as you state they quite agree with your argument; but they do not agree that it is at all a general practice on the part of the arbitrators to direct that each side shall bear its own costs and pay one half of the award.—I am, dear sirs, yours faithfully, W. J. LOCKE, Secretary.

Messrs. Braby and Macdonald,
Dacre House, Arundel-street, Strand, W.C.

SUNDERLAND TOWN HALL COMPETITION.—Mr. Jas. A. Swan writes that he believes the design mentioned in our review as that of "J. A. Watson" was really his, and that there was a mistake in the name. Our representative says that he read "Watson," but there may have been a mistake, owing to the notice or signature not being clearly written.

ERDINGTON FREE LIBRARY COMPETITION.

WE are requested to publish the following letter:—

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

March 4, 1904.

Competition for Erdington Free Library and Municipal Buildings.

DEAR SIR,—We are instructed by the Council of the Birmingham Architectural Association to express regret that the award of the professional assessor is proposed to be set aside, as such a course is unwarranted in this instance, and is prejudicial to the fair conduct of architectural competitions in the future.

The members of the Council are of the opinion that the design placed first by the assessor well merits its position, for the abilities shown in the compact planning, disposition of departments and economy. Clause 4, of the conditions issued to competitors, states that the work would be given to the author of the design placed first by the assessor, subject to his qualifications being, in the opinion of the assessor and Council, sufficient to warrant his being given the work.

Messrs. Ashford and Gladding are Associates of the Royal Institute of British Architects (by examinations 1893 and 1894), which alone is sufficient guarantee that they are capable of carrying out the work successfully.

Utmost fairness cannot be too strongly urged for competitors in public competitions, and very grave objections should be brought forward before the professional assessor's award is thrown aside.

Many members of the Council of the Birmingham Architectural Association, although unsuccessful, are quite in accord with the assessor's verdict.

A copy of this letter has been sent to the local papers.—Yours truly,

G. H. VERNON CALE,
GERALD MCMICHAEL,
Hon. Secs. Birmingham Architectural Association.

The Borough Surveyor, Erdington.

COMPETITIONS.

NEW COTTON EXCHANGE, LIVERPOOL.—We understand that on the 15th inst. drawings are to be sent in for the competition (limited to Liverpool architects) for the new Cotton Exchange at Liverpool, to cost 130,000*l*. Mr. Briggs, of Liverpool, is the assessor.

METHODIST COLLEGE, MANCHESTER.—In the limited competition for extensions to the Primitive Methodist College, Alexandra Road, Manchester, nine sets of drawings were submitted. The Committee appointed Mr. Henry Hartley, of Liverpool, as assessor, and he awarded the premiums as follows:—First premium, 50*l*., Mr. F. W. Dixon, of Trevelyan-buildings (Manchester); second premium, 30*l*., Messrs. Grayson and Ould (Liverpool); third premium, 20*l*., Messrs. Ewan Harper and Brothers (Birmingham); fourth premium, 15*l*., Messrs. Sankey and Cubbon (Manchester); fifth premium, 10*l*., Mr. W. H. Dinsley (Chorley). The College Committee approved the assessor's award and have instructed Mr. Dixon to proceed with the work. The cost will be about 18,000*l*.

NEW FREE LIBRARY, CLITHEROE.—A joint meeting of Clitheroe Town Council and the Free Library Committee was held in the Town Hall recently, at which the plans for the new Carnegie Library, prepared by Messrs. Butterworth and Duncan, Rochdale, and Mr. Sandbach, Blackburn, were reconsidered, when those of the former were accepted. The proposed structure is a building of Yorkshire dressed stone in the Renaissance style. The end facing Castle-street is a segment of a circle and carried forward at the top in the form of a tower, being 50 ft. high from the basement. At the top of the tower are three ornamental dormer windows. The building is three stories high from York-street. The entrance will be from Church-street, adjoining the present library. There will be a short vestibule giving access to a circular hall. From the entrance-hall, which also forms the borrowers' space, a staircase rises to the first floor, a landing giving access to the committee room and general reading-room. The latter will be fitted up with tables for the accommodation of readers, and at the tower end a circular room will be marked off by columns, forming a semi-private part for students. The architects give an accommodation for 15,000 books in the lending library; and the basement will be occupied as a work and store room, heating-chamber, etc.

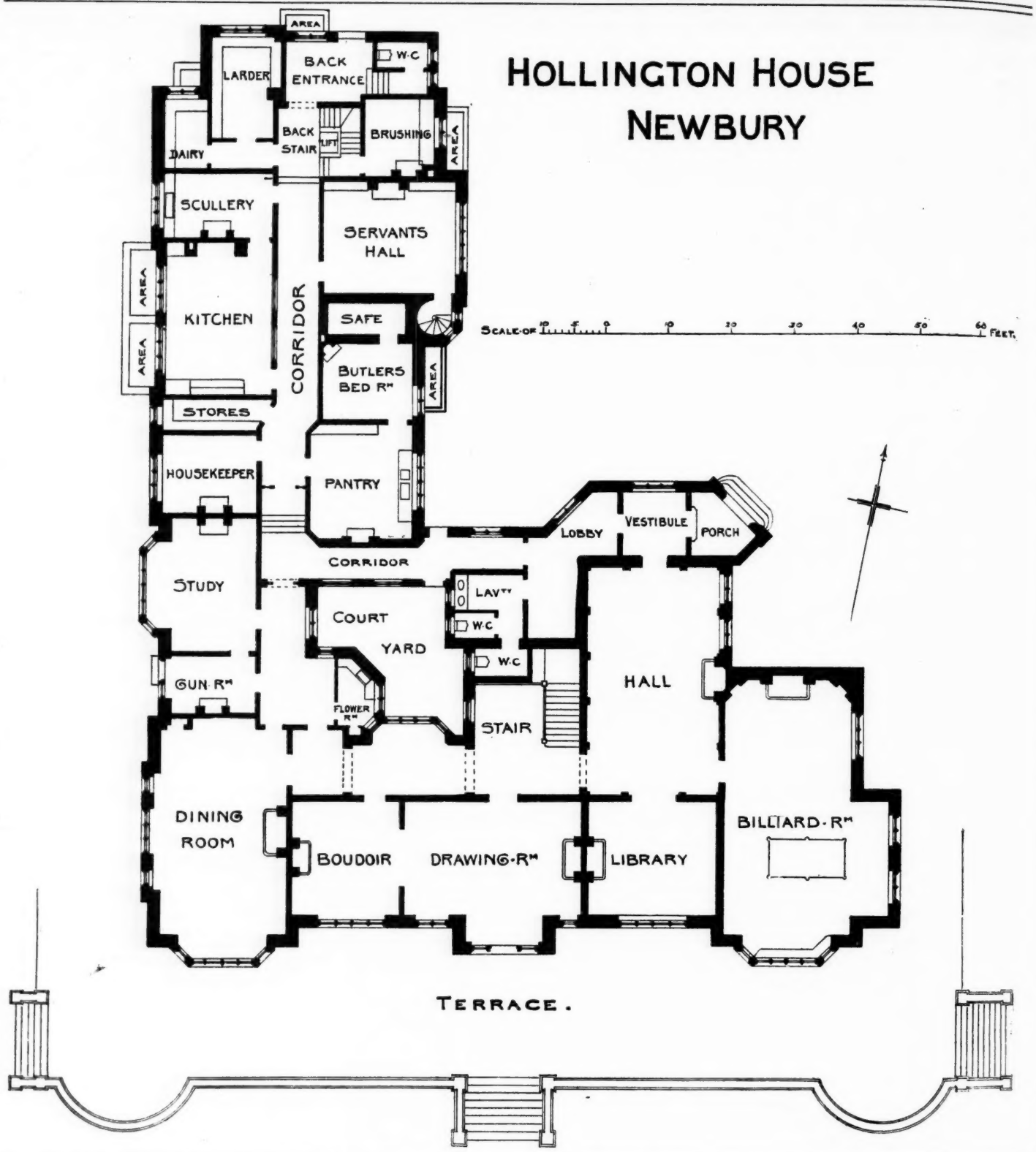
MANCHESTER NEW INFIRMARY.—The Board of Management of the Manchester Royal Infirmary held a special meeting on Monday to receive the report of Mr. J. J. Burnet, of Glasgow, the assessor appointed to consider the plans submitted to them for the erection of a new Infirmary on the Stanley-grove site. The Board selected twelve architects or firms of architects, whom they invited to prepare designs for the proposed Infirmary, and Mr. Burnet's selection was in favour of a design marked "B." This proved to be the work of Mr. Edwin T. Hall and Mr. John Brooke, of London and Manchester. Accordingly the Board appointed Mr. Hall and Mr. Brooke joint architects for the building of the new Infirmary. The assessor, in his report, said that with trivial exceptions all the plans fulfil the "conditions of competition," and each might be said fairly to meet the requirements. "Without exception the designs are very carefully worked out, and it is only after repeated and most detailed examinations that I felt able to place first the design marked 'B.' I do so as it seems to me in the disposition of its buildings on the site, in the efficiency of each for its purpose, and in their contiguity to exhibit in a greater degree than any of the others that simplicity and directness which is characteristic of all good planning and is so necessary to efficient and economic administration, and to afford that openness to sunlight and air which is so important an element in such curative establishments. The architectural treatment throughout is essentially in harmony with the plan, broad and simple in its lines, and free from elaboration and extravagance in ornament. The frontage to Oxford-street shows a dignified and imposing building, characteristic of its purpose and site, and essentially worthy of your city. Your surveyor, Mr. Windsor, has examined the drawings, the author's report and his cost, and reports to me that the execution of this scheme will entail an expenditure of 324,000*l*., with an additional 16,500*l*. if the full 600 beds are provided." The Stanley-grove site consists of about twelve acres, and the new Infirmary will have a frontage to Oxford-road of about 500 ft., with Union Chapel on its south side and the Eye Hospital on the north. The institution will contain some 20 wards and about 600 beds. In style, says the *Manchester Guardian*, the buildings designed by Mr. Hall and Mr. Brooke are of classical composition, and the Infirmary itself is planned upon the pavilion principle. The front of the new Infirmary will consist of three blocks, that in the centre being surmounted by a dome and clock similar to those which adorn the present building, and the side blocks each having a tower. The building in the centre will be devoted to administrative purposes; on the south will be the nurses' home (containing about 300 beds), and on the north the teaching department. Behind these three blocks long "surgical" and "medical" corridors will run east and west, with pavilion wards ranging from them. The wards are to be of two stories, but will be so constructed that a third story may be added, if necessary, at some future time. Attached to the surgical wards are the necessary operating theatres. The remaining portion of the irregular area is devoted to some other important departments of the work of the Infirmary. The out-patients' department is to be a separate building, with a frontage into Nelson-street (behind the Eye Hospital). Here also will be the entrance to the casualty ward, and on this side, too, will be the eye, skin, and ear wards and the gynecological wards. The pathological department will be situate on the south of the Infirmary buildings. All the designs submitted to the assessor will be exhibited to the public in the course of the next few weeks at the City Art Gallery. In appointing Mr. Hall and Mr. Brooke their architects the Board reserve to themselves the right to alter or vary the plans, so that the design now under consideration is not necessarily the one which will be adopted eventually.

GLASGOW BUILDING TRADES EXCHANGE.—On the 2nd inst., in the Exchange, Colonel Bennett delivered a lecture to the members and friends on "A Tour in Italy." The lecturer confined himself principally to dealing with the architectural features of the various Italian towns visited. He devoted himself especially to a detailed description of St. Mark's, Venice. The lecture was illustrated by a large number of photographs of the subjects dealt with, which were displayed by lime-light.

ROYAL COMMISSION ON LONDON LOCOMOTION.

AT the sitting of this Commission on Thursday last week, evidence was given by the inventor of the mono-rail, Mr. F. B. Behr. He said that it appeared to him that the creation of a central authority not only to regulate the traffic itself, but to determine what class of railways or tramways, or what streets, should be built, was of the utmost importance in view of many mistakes which had already been made in the designing and providing means of communication in London in the past. As an instance he mentioned the tube railways already authorised and partly constructed. In many places those tubes duplicated each other for considerable distances, at an enormous cost and waste of capital. One instance was in the City, from Moorgate-street to Finsbury, and another was the case of the Waterloo and Baker-street line, and the Charing-cross and Hampstead line, which for more than a mile ran within an average distance of half-a-mile of each other. He considered that the enormous sums spent on tubes might be more advantageously employed on the construction of overhead railways. The great prejudice against overhead railways in London was due principally to the idea that they were very ugly and would disfigure the streets. Certainly in some places—New York was one—they had been designed in a very ugly manner. Overhead railways had been built on the Continent, however, which, instead of disfiguring the streets, had, in many cases, "added new features of architectural beauty to them." He mentioned Berlin as an instance, and in order to show the Commission the effect of such railways, he submitted for their inspection a set of photographs of the overhead railways in that city. It was quite possible to design overhead railways on lines running at the back of houses, and not in the centre of the streets; this had been done in Berlin in some instances, and such a system would be quite possible in some part of London, and would not cost more than 200,000*l*. a mile. Overhead railways had the advantage of being in the open air. He had designed two lines of mono-rail for London. One, 12 miles in length, would be from East to West, through North London; starting from the Royal Oak, by Edgware-road, and proceeding through St. John's Wood, Camden Town, King's Cross, Islington, Haggerston, and Hackney to the Albert and Victoria Docks. There would be three branch lines of a total length of 5 miles 5 furlongs; one from the Royal Oak to Willesden Junction, another from Haggerston to Old Broad Street, and another going by Stepney to Limehouse. He submitted plans and sections, &c., of these lines, which would, he estimated, cost 100,000*l*. per mile. Another line of mono-rail which he had designed would start from the Houses of Parliament, and, proceeding along the Chelsea Embankment, would terminate at Putney Bridge Station. Mono-railways had many advantages, among them being cheapness, the possibility of passing under existing road bridges in many cases, the use of very sharp curves without much friction, and the absolute impossibility of derailment.

Mr. Francis Fox, of the firm of Sir Douglas Fox and Partners, was the next witness. He said that he was a member of the technical commission of experts for the Simplon Tunnel through the Alps, and had had a large experience in tunnelling. He was strongly in favour of shallow tunnels or subways where the conditions permitted, as they were more accessible for the public, required no lifts and comparatively few steps, and were more easily ventilated. Under new and very wide streets such subways would be satisfactory, but he strongly deprecated the proposal to construct them under existing thoroughfares in the metropolis on account of the great danger to adjacent property. London stood on alluvial deposits which rested on a bed of gravel and sand, and these rested on the great bed of London clay. In consequence of that formation all water falling on the surface, except that conveyed direct to the sewers, and all natural springs penetrated through the sand, and ran in underground streams of varying depth upon the upper surface of the London clay. If shallow subways were constructed they would be almost wholly in that bed of sand and gravel. Adjacent property would have to be undermined down to the clay, and the entire system of sewers and house drainage would have to be reconstructed. The pumping in inevitably results in the drawing away of sand from beneath adjacent property, and that would result in varying degrees of damage. An illustration of this was at St. Paul's Cathedral, and another occurred during the construction of the Park branch of the Mersey Railway at Birkenhead. It was to obviate such effects that the late Mr. Greathead adopted the



system of deep-level tubes in the clay. To abandon the tube system for shallow subways would, in his opinion, be a retrograde step. Dealing with the question of the ventilation of tubes witness said that to ensure healthy ventilation the entire air in a tunnel should be changed every hour during the periods of dense traffic. Coming to the question of the prevention of fire and panic on tube railways, he outlined what had been done in this direction on the new Great Northern and City Railway, and the various other London tubes, and said that most of the necessary precautions had been adopted before the recent fatal fire on the Paris Underground Railway. One point he wished particularly to emphasise—the covering of all leads and circuits should be of some non-flammable material, as gutta-percha when fired produced dense volumes of smoke.

MEMORIAL STATUE, HEXHAM.—On the 29th ult., the Benson statue, to the memory of the late Colonel G. E. Benson, R.A., was placed in position on the carved stone pedestal at the top of Beaumont-street, Hexham. The statue is a bronze figure, and represents the deceased in the African, or khaki, uniform of a colonel, holding in his hands a pair of field-glasses. The sculptor is Mr. John Tweedy, of Chelsea.

Illustrations.

NEW BUILDINGS AT CAMBRIDGE.

WE give, on a large scale, the street and court elevations of Mr. T. G. Jackson's long range of new buildings in Downing-street for the University of Cambridge, which were partly the subject of an article in our last issue. We should have preferred to have published the illustration in the same issue, but it was not convenient to disturb arrangements which had already been made for that week's illustrations.

The drawings are elevations made before the buildings were carried out, but as far as we noticed, there is no departure from the design shown here except in the detail of the sculptured animals at the foot of the external staircase, which, as indicated here, are different from those actually executed.

HOLLINGTON HOUSE, NEAR NEWBURY.

THIS house is quite new throughout, and stands on the site of the original house of the same name—viz., a small cottage residence which had been added to by an amateur architect some years ago and was totally unfit for further enlargement or improvement. The new house is built of Guiting stone, the principal front and entrance wing being relieved by piers of red brick, of which material the chimneys also are built. The stone dressings to windows are of Taynton stone, and the roofs are covered with local tiles which have been dipped in a special solution to give them a brown colour.

The north-east wing of the house is treated in a less formal style, and a liberal use has been made of oak half-timber work and rough-cast plaster. The principal rooms on the ground floor are panelled with oak, and a feature is made of the entrance-hall, which is carried to the height of the first-floor ceiling. A gallery is carried across the end and above the oak panelling, which extends up to the gallery front; the walls are treated with plaster panels, and the ceiling is divided into bays by ribs with fruit and flower enrichment. There is ample cellar-room under the north-east wing, in which are situated the heating apparatus, wine and beer cellars, coals, and lumber-rooms. A subway is provided under the principal corridors, in which are placed the electric cables and heating supplies, etc. The house is lit by electricity, and there is an electric lift for luggage and coals.

The work has been carried out by Messrs.

Wheeler Brothers, of Reading, under the supervision of Mr. S. Windebank, clerk of the works. The engineering works have been designed and carried out under the superintendence of Mr. E. Wingfield Bowles.

ARTHUR C. BLOMFIELD.

GALLERY AND BALL-ROOM.

THIS room forms a portion of additions made to a large Yorkshire mansion, and serves the purpose of providing additional accommodation for entertainments as well as for the display of valuable pictures.

All the woodwork—including the floor—is of fumed Austrian oak. The walls above the dado are covered with Tynecastle tapestry with raised pattern and painted green.

The carving of the woodwork was done by Mr. Ralph Hedley, of Newcastle-on-Tyne, and the ceiling by Messrs. G. Jackson and Son, of London.

The architects are Messrs. Clark and Moscrop, of Darlington.

A TOWN HOUSE.

THIS house was designed with a view to making a slight departure from the ordinary London house. The front door becomes the central feature of the elevation, leading to a large entrance-hall, while the dining-room is raised to the first floor, to bring it to the same level as the drawing-room. The drawing was exhibited in the Royal Academy in 1898.

E. W. ALLFREY.

PREMIATED HOUSES IN PARIS.

A CORRESPONDENT in Paris writes to say that the arrangement of the kitchen and water-closet in the plan of M. Hodanger's flats, published in our issue of February 27, is not exactly as the plan makes it appear. The water-closet is not lighted by a borrowed light from the kitchen, but by a light from the court-yard, over a low cupboard not the whole height of the kitchen. This is better, no doubt, than the apparent arrangement; it is to be hoped that the window is made to open; but in any case the proximity of the water-closet door to the kitchen door, in a confined corner of the plan, would be strongly condemned by English sanitarians.

BOOKS RECEIVED.

THE ROCK-CUT TOMBS OF EL AMARNA. By N. de G. Davies. Thirteenth memoir of the archæological survey of Egypt. (Kegan Paul, Trench, Trübner, & Co.)

STAINED GLASS. By Lewis F. Day. (Chapman and Hall. 4s.)

Correspondence.

WOODEN BUILDINGS IN LONDON.

SIR,—On page 254 you review the year-book of the Incorporated Association of Municipal and County Engineers, in which is a paper on wooden structures and the powers of Metropolitan Borough Councils. I cannot help thinking that Mr. J. Patten Barber has taken the wrong view of this question.

It is unfortunate that the London Building Act omits the definition of a "building," but the sole cause of all the trouble of which Mr. Barber complains is the absurdity of taking one section out of the Building Act. In the hands of the Borough Council local influence may secure a licence which a central body would refuse, and nothing could be worse for the public than the multiplication of wooden buildings.

My view is that no wooden buildings should be licensed, and that the new Building Act should require (as was the case with sky-signs) that all wooden structures should be removed within two years of the passing of the Act. In some neighbourhoods the gardens and backyards are so covered with shanties that some day there will be a very serious fire.

Instead of making the erection of wooden buildings and structures more easy, I would make it more difficult, and to that end would suggest the repeal of the absurd section of the London Government Bill. SURVEYOR.

THE TORQUAY LIBRARY COMPETITION.

SIR,—In reference to your note in to-day's issue of *The Builder* relative to the Torquay Library Competition, I should like to say that I, too, received the circular, dated February 17, referred to by your correspondent, also many days after the date at the head of the circular and within about a fortnight of the expiration of the time allowed for completion of the drawings. The information in the clause about windows was given to me under date January 5 in answer to inquiries I made under date December 18, and, of course, ought to have been sent to all other competitors on the same date. By this circular of February 17 date, we are also coolly told that the Assessor considers that the accommodation asked for cannot be given for the money allowed, but that "in the consideration of the designs he will give great weight to those which show, by their economy of arrangement and design, the nearest approach to the figure given in the conditions."

To draw up conditions which cannot, by any possibility, be genuinely fulfilled is both unfair to competitors, and shows a lamentable want of consideration for the architectural profession generally, and to fire off bombshells of the nature of this circular at the competitors within a few days of the time for sending in drawings does not relieve those responsible from blame in this connexion.

From a careful study of the replies I received, and from all the other information furnished to competitors, I concluded that the Corporation had not bestowed sufficient consideration on the business to insure a satisfactory result either to themselves or to competitors, I therefore refrained from wasting my time on the work, and hope that few of my professional brothers have been beguiled into sending in designs, and that the Corporation will get that for which they have made preparations—viz., a muddled-up building in accordance with the muddled-up requirements.

The site is, to my mind, quite unsuitable for a Library and Municipal Offices, flanked as it is on one side by a towering furniture depository, which will constantly menace with destruction by fire the valuable books of the library and records in the Municipal Offices.

The moral of all this is, that those about to promote competitions should, as the "Suggestions," etc., of the R.I.B.A. say, "appoint as Assessor one or more architects of established reputation" as their very first step, and that these Assessors should not only report on the relative merits of the designs, but also draw up the conditions upon which the designs are to be based.

The only way to force promoters to do this is for architects to abstain from competing when this course is not pursued; while, at the same time, every effort should continue to be made by the R.I.B.A. and the Competition Reform Society to bring about a better way of managing competitions than too often obtains at present. W. B. HOPKINS.

London, March 5.

[*** See our Note on page 276; from which our correspondent will see that the committee have acted without consulting the assessor.—ED.]

The Student's Column.

ARCHES.—XI.

ANOTHER arch theory, based on the hypothesis of least thrust at the crown, is that of Dr. Scheffler,* in which, however, no account is taken of the horizontal components of the external forces.

This theory does not, as is sometimes stated, assume that the stones forming the voussoirs of the arch are incompressible. It is true that, as developed by Scheffler, the theory gives the position of the line of pressures for incompressible voussoirs, but its author recognises the fact that compression of the material affects the line of resistance so that it will be diverted towards the centre line at points where it would otherwise be in close proximity to the outer boundary of the arch ring.

For the purpose of illustrating the application of this theory, we will take, as an example, a segmental arch, of which the left-hand half is shown in Fig. 54. The span of the entire arch is 50 ft., with a rise of 10 ft. The voussoirs have the uniform depth of 2 ft. 6 in., and the arch is surmounted by a masonry spandrel wall, the top of which is 2 ft. 10 in. above the crown. In the determination of the line of resistance for this arch we will follow the exposition of Scheffler's theory, as given in Cain's "Practical Theory of Voussoir Arches."

Dealing with the semi-arch, represented in Fig. 54, it is necessary to ascertain the value and point of application of the resultant of the external forces acting upon portions of the arch above the joints, considered successively from the crown to the springing. It is assumed that the lengths of the voussoirs have not been settled. Therefore, for the purpose of the present demonstration, we divide the half span of 25 ft. into five equal portions, as shown in the diagram, and draw tentative radial joints through the points A, B, C, D, E, and F.

The load on any part of the arch is then assumed to be proportional to the area immediately above it. For instance, the load on K C B J is assumed to be proportional to the area N S T O.

It should be observed, however, that the load on the joint C K is actually K C S T B J, and not N S T O. The amount of the error varies with the form of the arch, being at a minimum near the crown of a flat segmental arch, and at a maximum near the springing of a semi-circular arch.

Scheffler gives the following approximately accurate method for altering the positions of the joints to correct errors of the kind here mentioned:—

Let A B C, Fig. 55, be the side of the trapezoid, and B D the uncorrected joint. From *c* midway between C and D draw the line *c* A; also draw C *b* parallel to *c* A, and *b d* parallel to B D. Then *b d* will represent the corrected joint. The error would also be eliminated by determining the separate weights of C S T B and K C B J, in Fig. 54, and combining them into a single resultant for the weight on the joint C K. Or, by drawing the arch to a large scale on cardboard, then cutting out the various polygons which represent the loads, the amount of the latter could be determined from the weights of the corresponding sections of the cardboard, and the centre of gravity of each section could be found experimentally.

When the areas representing the loads have been determined, it is necessary to find the values of the several loads and the distances of their centres of gravity from a vertical line drawn through the crown of the arch, and also to ascertain the values and positions of the centres of gravity of the loads above the several joints.

Table II. gives the data necessary for these operations. The lengths of the medial lines of the several trapezoids are given in the column 1 of Table II. In column 5 are the products of the values in columns 3 and 4. Column 6 gives the continued sums of the quantities in column 3; column 7 the continued sums of the quantities in column 5; and the figures in column 8 have been arrived at by dividing the quantities in column 7 by the corresponding quantities in column 6.

* "Theorie der Gewölbe, Futtermauern, und eisernen Brücken," Brunswick; and "Traité de la Stabilité des Constructions," Paris.

TABLE II.—FOR THE APPLICATION OF SCHEFFLER'S THEORY.

No. of Division of Arch.	Values and Positions of the Centres of Gravity of the Loads.				Data for Values and Centres of Gravity of the Loads over the Several Joints.			
	Dimensions of the Sections.			Horizontal Distance of Centre of Gravity of each Section from *c*.	Moments of each Section, about *a*.	Area of the Load above the Joints.	Moments of the Loads over the Joints, about *a*.	Horizontal Distance from *a* to the Centre of Gravity of the Loads over the Joints.
	Height.	Width.	Area.					
1	5·4	5	27·0	2·5	67·50	27·0	67·50	2·5
2	6·1	5	30·5	7·5	228·75	57·5	296·25	5·1
3	7·6	5	38·0	12·5	475·00	95·5	771·25	8·1
4	9·8	5	49·0	17·5	857·50	144·5	1,628·75	11·3
5	13·2	5	66·0	22·5	1,485·00	210·5	3,113·75	14·7
6	14·5	1·75	25·4	25·9	657·86	235·9	3,771·61	16·0
Col.	1	2	3	4	5	6	7	8

The next step is to determine the least crown thrust, which being applied at *a*—the upper limit of the middle third of the crown joint—will be sufficient to insure the safety of the semi-arch from failure by rotation. The centre of moments for each joint is taken to be situated on the lower boundary line of the middle third of the arch ring.

Then to insure equilibrium about any joint

$$Q = W\,x \div y$$

Where Q = horizontal thrust at the crown; y = the arms of the horizontal thrust; W = the load above any joint; and x = the arm of the load W.

The value of W for each joint is given in column 6 of Table II., in terms of the weight of one cubic foot of the masonry. The value of x for any joint is the horizontal distance between the resultant of the load above the joint and the centre of the moments for the joint; and to find the value of x for any joint, shown in Fig. 54, we must first take the horizontal distance between *a* and the centre of moments, and then deduct the horizontal distance between *a* and the centre of gravity of the load above the joint under consideration, the latter distance being stated in column 8 of Table II.

The required quantities for the va'ue of x are stated in Table III., the first in column 2, the second in column 3, and the difference in column 4.

TABLE III.—FOR THE APPLICATION OF SCHEFFLER'S THEORY.

No. of Joint.	Area of the Load above each Joint. (= W)	Horizontal Distance from *a* to the Centre of Moments for the Joints.	Horizontal Distance from *a* to the Centre of Gravity of the Loads over the Joints.	Area of the Load about the Centre of Resistance of the Joints. (= x)	Area of the Thrust about the Centre of Resistance of each Joint. (= y)	Horizontal Thrust required to Prevent Rotation about the Joints. = Q
1	27·0	4·8	2·5	2·3	1·15	54·0
2	57·5	9·6	5·1	4·5	2·09	123·6
3	95·5	14·4	8·1	6.3	3·72	116·9
4	144·5	19·2	11·3	7·9	6·16	185·3
5	210·5	24·0	14·7	9·3	9·60	204·0
6	235·9	25·6	16·0	9·6	11·00	205·9
Col.	1	2	3	4	5	6

The values of y for the several joints are given in column 5, of Table III., and the values of the horizontal thrust required to insure safety against rotation about the several joints, can be obtained by the formula given above after substitution of the foregoing data. These values are stated in column 6 of Table III., where it will be seen that the maximum horizontal thrust is at joint No. 6, which consequently is the joint of rupture. This position of the joint of rupture is only what might have been expected (see Article X., p. 258), as the angular distance of joint No. 6 from the crown of the arch is little more than 43 degrees.

The final step is to construct the line of resistance for the semi-arch. For this purpose it is first necessary to find the centre of pressure on joint No. 1, the joint next to the crown, in the following manner:—Draw a horizontal line through *a* and lay off a distance *a b*, representing, to any convenient scale, the horizontal distance from the point *a* to the centre of gravity of the load above joint No. 1, taking the value of this distance from column 3, Table III. The point *b* is that through which acts the weight of the section O T U I, approximately equal to that of J B T U I. Next, lay off from *b*, also to a convenient scale, the vertical line *b c*, representing the superincumbent load, or, in other words, the area of the load above joint No. 1, taking for this the value stated in column 1, Table III. Then lay off from the point *c*, the line *c d* representing the value of Q, the horizontal crown thrust required to insure safety against rotation, taking the necessary quantity from the bottom line of column 6, Table III. Connect the points *d* and *b*, and, in accordance with mechanical principles, the line *d b* will represent the resultant pressure on the first joint B J. By producing the line *d b* to intersect the joint B J, we find the point *e* to be the centre of pressure for that joint.

The centre of pressure for the second joint is found by laying off from *a*, the horizontal distance *a f* representing, to the same scale as before, the distance from the point *a* to the centre of gravity of the load above joint No. 2, taking the value from column 3, Table III. Lay off from *f*, to the scale previously used, the vertical line *f g*, representing the weight of the superincumbent loads above joints Nos. 1 and 2, taking the value from column 1, Table III. From the point *g*, lay off the line *g h*, representing the value of Q, the horizontal crown thrust, taking the necessary quantity, as before, from the bottom line of column 6, Table III. Connect the points *h* and *f*, completing the triangle of forces, and the line *h f* will represent the resultant pressure on the second joint C K. Producing the line *h f* to intersect the joint C K, we find the point *j* to be the centre of pressure for that joint.

Following a similar course, we obtain the triangles of forces:—*k l m*, *o p q*, *s t u*, and *w x y*, giving the centres of pressure for the succeeding joints. A line joining the centres of pressure *a e j n r v* and *z* would be the line of resistance of the arch, but this is omitted from the diagram for the sake of avoiding confusion.

Having thus determined the line of resistance, the stability of the proposed arch can be considered in the manner discussed in Article IX., pp. 229-230.

The above described method of constructing the line of resistance is simple and convenient, but its adoption involves the assumption that the external forces are vertical, which we know is not a correct hypothesis.

The student will find it instructive to compare the lines of resistance for the semi-arch represented in Fig. 47, p. 229, (1) as afforded by Scheffler's theory, and (2) by the theory described in Article IX.

On p. 229 we have an equilibrium polygon for the arch in question, and from this it is easy to draw the line of resistance, which we have indicated in Fig. 56 by continuous lines.

A line of resistance should then be constructed in accordance with Scheffler's theory, disregarding the horizontal components of the external forces, and taking the necessary data from Table I. After laying off the crown thrust and the loads as given in the table, the remainder of the construction is similar to that explained in Article IX. The line of resistance so obtained is indicated in Fig. 56 by broken lines.

Comparison of the two lines of resistance shows that they are fairly in agreement above the joint of rupture for this particular arch, whereas the divergence is considerable below that joint, and increases as the springing is approached. It follows, therefore, that if reliance be placed upon Scheffler's theory, the thickness of the arch at the springing must be greater than that which is required by the other theory. As a matter of fact, the thickness will be greater than is actually necessary.

It should be observed that in taking the value of the crown thrust from Table I., the correct quantity for employment is the maximum value on the fourth line of the column headed $\Sigma\ w\ x \div y$. This is the thrust that would establish a condition of equilibrium about the joint of rupture, which we already know to be joint No. 4. If the quantity on the last line of the same column were employed, the erroneous result would be obtained that is indicated by the dotted line of resistance, in Fig. 56, tangent to the intrados, a condition absolutely incompatible with stability. But such a line of resistance would be entirely wrong, for we have already proved the arch to be perfectly safe. The point is worthy of careful attention, as the erroneous method here indicated necessarily tends to heavy and wasteful construction.

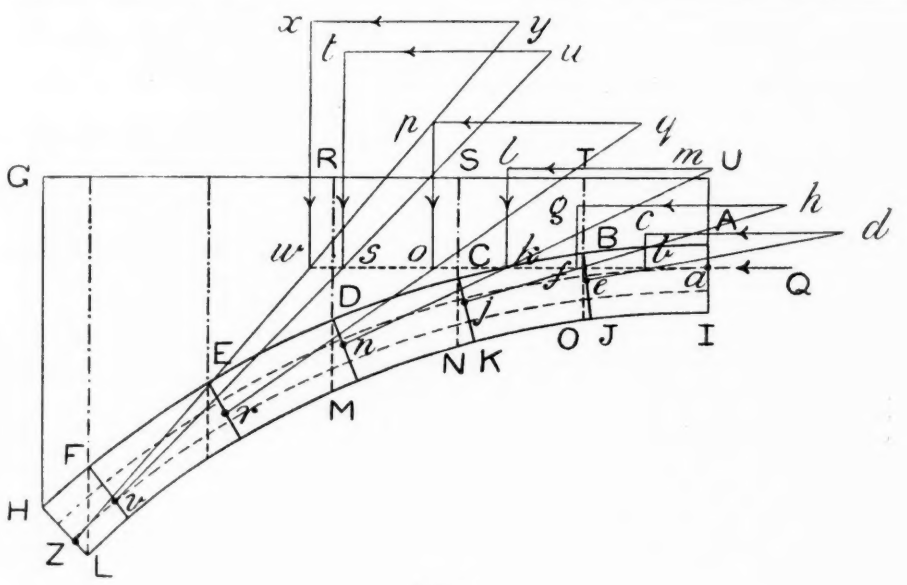


Fig. 54.

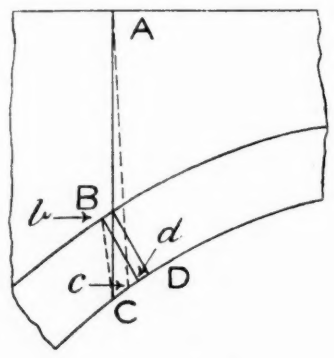


Fig. 55.

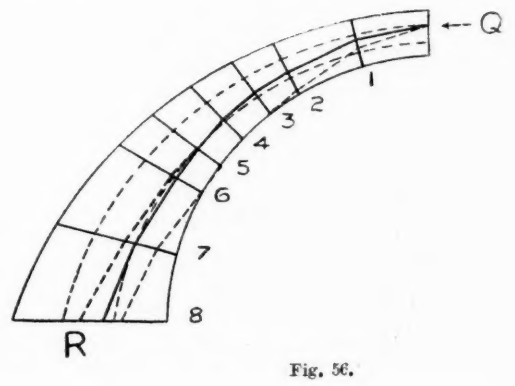


Fig. 56.

METROPOLITAN ASYLUMS BOARD.

THE usual meeting of this Board was held on Saturday last week at the Offices, Victoria-embankment. Among the correspondence received was a letter from the Local Government Board approving of the amended plans of the laundry buildings, disinfector and destructor houses at the Southern Hospital.

Eastern and Western Hospitals.—On the recommendation of the Works Committee, it was agreed to make application to the Local Government Board for sanction to the Managers inviting tenders for wiring the Eastern and Western Hospitals for electric-lighting purposes. Six firms will be selected.

Joyce Green Hospital.—On the recommendation of the same Committee, the following was agreed to:—"That the quantity surveyor who took out the quantities relating to Messrs. Leslie and Co.'s main contract for the erection of the Joyce Green Hospital be called upon to pay the Managers the sum of 775*l.* in settlement of the errors which he has made in such quantities."

OBITUARY.

DR. A. S. MURRAY.—It is with the greatest regret that we have to record the death, after a comparatively short illness, of Dr. A. S. Murray, the learned archæologist and keeper of the Greek marbles at the British Museum. Dr. Murray, it is to be feared, was a martyr to his own strict sense of duty in fulfilling obligations entered into. He had engaged to give four lectures on ancient sculpture at the Royal Academy, but at his third lecture, on February 22, his friends noticed his evident weakness and difficulty in reading, and he admitted that he did not feel fit to be out at all; and medical advice, had he asked for it, would probably have kept him at home that day; but he knew little of illness, having never, we believe, been absent from his duties for a day through illness during his whole long course of connexion with the Antiquities Department of the British Museum. His effort on this occasion unhappily brought on an attack of pneumonia, from which he died, in his house in the British Museum, on Saturday last. Dr. Murray was born in 1841, near Arbroath, in Forfarshire, and educated at the Edinburgh High School and University, and was subsequently a student of the Berlin University, where he acquired the familiarity with the German language and German methods of study which is now all but a necessity to Greek archæologists. It was in 1867 that he was appointed assistant to Newton in the Greek Antiquities Department of the British Museum, with which he was connected for the remainder of his life, succeeding Newton as the head of the department. Dr. Murray did a great deal in the way of re-arranging the Greek marbles so as to add to the significance of their grouping. His most marked achievement in this respect was his decision to place the figures of Mausolus and Artemisia in the restored chariot in the middle of the mausoleum; a decision which was strongly criticised by various Greek archæologists, and was the subject of an animated discussion at one of the meetings of the Hellenic Society, where he read a short paper giving his reasons for the course he had taken. We believe that he was right, and that the two statues now occupy the position they actually occupied when on the top of the mausoleum. Dr. Murray's main work in life really consisted in his management of the British Museum Greek department, but he found time to write a "History of Sculptures," a "Handbook of Greek Archæology," and a book on the sculptures of the Parthenon. These books, the "History of Sculpture" especially, are valuable rather for the care for accuracy with which they were compiled than for literary style, which was not his *forte*. He told what he knew in simple and unadorned language; and his lectures had the same character; they were intended to give information, not to amuse a popular audience; and, in fact, we have seldom heard any discourses more full of solid information in proportion to their length than these four recent Academy lectures. His lectures, however, were not without an occasional flash of quiet humour, which gained additional effect from the Scotch accent which he had never lost. Dr. Murray was the most modest and unassuming of *savants;* there was nothing of the learned pedant about him; he retained always a certain simplicity and boyishness of manner, and was a genial companion and a warm friend; and his information about the museum collection and about Greek antiquities generally was at the service of all who asked for it. Dr. Murray has been an occasional contributor to our own columns, and had, in fact, promised us an article on a special subject as soon, he said, as the Academy lectures were off his hands: a promise destined never to be fulfilled.

MR. SAMUEL QUICK CLEMENCE.—Mr Clemence, who died at Horley, in Surrey, on the first of this month, in his eighty-fifth year, though living in retirement the last few years, was well known for quite half a century to most of those following the building business in the Metropolis in connexion with the late firm of Messrs. Kelk and Lucas and Messrs Lucas Brothers, and with the work which they have executed there and in various parts of the kingdom. Entering their service in 1845, he continued with them until they retired from business about ten years ago, and during a period of nearly fifty years he had the entire charge of most of their large contracts, and his thorough practical knowledge of every branch of the building trade is evidenced in the works which he superintended and carried out for them. Among other things, we may mention that the timber framework upon which the domes of the 1862 Exhibition were built was entirely designed by him, as also the travelling centres or scaffoldings for the nave and transept roofs. Of the dome centring he had a large model made, which may now be seen in the Museum of Models at Woolwich Arsenal, to which it was presented.

MR. J. W. TWIST.—Mr. J. W. Twist, architect, of Bloemfontein, has died suddenly on the farm Weltevreden, where he had been residing for his health.

GENERAL BUILDING NEWS.

CHURCH OF ST. PAUL, FAIRHAVEN, NEAR MANCHESTER.—The consecration of the new Church of St. Paul, Fairhaven—the watering-place between St. Anne's and Lytham—took place on the 29th ult. The church is intended to hold ultimately 800 worshippers. To the south of the chancel is a side chapel for week-day services, but sufficiently open to the nave to be used for Sunday services. To the south of the chapel are large vestries, with an adjacent porch. The organ loft is north of the chancel, and the hydraulic engine for the bellows is in the basement below. The altar is raised seven steps above the nave floor. The building is of red brick, relieved here and there outside by panels of split pebbles from the beach, as well as by the use of stone both outside and in. The roofs are covered with deep green north country slates. The church now consecrated consists of chancel, south-east chapel, vestries, organ chamber, south nave and south aisle, west and south-east porches, and the lower stages of the tower, and will seat 422 worshippers. Mr. John Walmsley, of Preston, has carried out the work under the direction of the architect, Mr. Medland Taylor, of Manchester.

RESTORATION OF SINNINGTON PARISH CHURCH.—The restoration of Sinnington Parish Church is now in progress under the direction of Mr. Hodgson Fowler, the architect. All the ancient features will be preserved. The church will have a new spire and a red-tiled roof. The contractor is Mr. Alfred Barnes, of Malton, and Mr. Nicholson, of Barton-le-Willows, is carrying out the woodwork. The restoration of the church and organ will cost about 1,200*l.*

WESLEYAN SUNDAY SCHOOL, WHITTINGTON MOOR.—The foundation stones of a new Sunday School for the Wesleyans were laid at Whittington Moor recently. The site faces the Chesterfield and Staveley road, and is situate in the cross street that connects the latter thoroughfare with the Sheffield road. The architect is Mr. W. Cecil Jackson, Chesterfield, and the contractor is Mr. J. Wright, of Barlow. On the ground floor will be a church parlour, a young men's room, and four class rooms, together with a kitchen and the usual conveniences. The assembly-room will occupy the whole of the first floor, and will provide accommodation for 300 persons.

CONGREGATIONAL SCHOOLS, PEMBERTON.—The opening of the Richmond Hill Congregational Church School, Pemberton, took place recently. The new buildings have been carried out in red brick and stone, and contain, amongst other features, a central hall, designed for both services and school purposes, entered from a vestibule, with two inner vestibules, which can, if desired, be used as cloak-rooms. At each side there are lecture-rooms and class-rooms. The lecture-rooms are partitioned off from the main hall with movable screens, so that these rooms can be made to form part of the hall, and with three class-rooms on each side, together with ministers' vestry and tea-room, comprise the ground floor, with the usual conveniences for boys and girls. The building is lighted throughout by electricity, and is also heated by hot water from boilers in basement, which work has been carried out by Messrs. Crumblehulme, of Bolton. The ventilation has been carried out by Mr. O. Pickup, of Bury. The contractor has been Mr. A. Bywater, of Pemberton, and the sub-contractors were:—Mason work, Messrs. Webster and Winstanley; plumber and glazier, Mr. Unsworth (Ashton); plasterer, Mr. Higham. The accommodation of the main hall is 450 adults, gallery seventy-five, lecture-rooms 100, being a total of 625 adults, exclusive of class-rooms. The work has been carried out under the supervision of the architects, Messrs. J. B. and W. Thornley, Wigan, Darwen, and London.

ST. EDMUND'S COLLEGE, WARE.—An extension is about to be made of the buildings of the Roman Catholic seminary for priests, at the Old Hall, Ware, for the accommodation of fifty theological students, together with the addition to the college church of a new chapel, after plans and designs by Mr. F. Walters.

TECHNICAL INSTITUTE, STOURBRIDGE.—The stone-laying ceremony at the Stourbridge Technical Institute and Carnegie Library took place on the 25th ult. The entrance to the Library and Art School is from Hagley-road, and to the Technical Institute from Church-street. Over the main entrance in Hagley-road, which is 10 ft. 6 in. wide, will be a panel representing art and literature. The rooms on the basement will afford accommodation for wrought-iron work, carpentry, etc., with provision for stores and heating apparatus. Four rooms range from 38 ft. to 40 ft. long and 21 ft. wide, and there are two rooms 21 ft. square as well. On the ground floor there will be a lending library 50 ft. by 21 ft., a magazine and reference library 40 ft. by 21 ft., a news room 38 ft. by 21 ft., a ladies' room 17 ft. by 13¼ ft., and also a librarian's office, book store, etc. The reference library has an octagon bay facing down High-street. The technical part of the building includes modelling room, casting room, cookery instruction room, and rooms for the caretaker. On the first floor of the building, which is reached by turning to the right from the main entrance, is the accommodation for the School of Art. There is an antique and painting room, a life room, an advanced room, an elementary room, and mechanical and cast rooms. Headmaster's room, committee room, lavatories, etc., are found on this floor. On the second floor will be rooms for science teaching, including lecture room, chemistry laboratory, physics laboratory, etc. Altogether there are twenty-six class rooms, together with rooms for caretaker, and other uses. The design of the building generally is classic, and the dressings and mullions are in buff terra cotta. The roof is to be of green Westmoreland slates. The gable, at the corner of Hagley-road and Church-street, will be surmounted by an ornamental ventilating turret, the summit of which will stand 80 ft. above the road level. Mr. F. Woodward, Town Surveyor, is the architect of the building.

DIAL HOUSE, NEWCASTLE-ON-TYNE.—New business premises, five stories high, have just been completed in Northumberland-street. The architects were Messrs. Oliver, Leeson, and Wood, and the contractor Mr. John Ferguson, Newcastle.

FISHERLADS' INSTITUTE, GRIMSBY.—The proposed additions to these buildings occupy an area of 300 sq. yds., being one-third of the area of the old buildings, extending the whole depth of the site from Orwell-street to Riby-street, and having a frontage in each street of about 30 ft. They comprise mainly two blocks, each of two stories. The Orwell-street block has on the ground floor two class-rooms; the front room is devoted to classes for engineers, the back room being fitted up with all the appliances for teaching sea cookery. The upper floor is occupied by a room for navigation classes and other subjects; it can also be used for meetings and entertainments, having a seating capacity of 160 adults, exclusive of the platform; a new lavatory will be built adjoining this room, opening from the landing. The Riby-street block has on the ground floor a laundry. It is to be equipped with modern machinery for dealing with the great number of towels and bathing-dresses from the slipper and swimming baths, as well as to meet the domestic requirements of the staff. The new slipper baths, seventeen in number, occupy a hall extending over the laundry and the engine-house. The surface of the floor and of the gallery adjoining will be of random marble mosaic. The slipper bath hall is approached through a swing door, opening from a new gallery in the swimming bath, having a range of dressing-boxes above and below. A new wide and straight stone staircase replaces the old wooden one. The old and the new buildings will be fitted throughout with electric light. The plans have been prepared by Mr. John J. Cresswell, architect, of Grimsby.

NURSES' HOME, CLAYTON WORKHOUSE, YORKSHIRE.—On the 2nd inst., at the Workhouse of the North Bierley Union at Clayton, the opening took place of a Nurses' Home, which has been erected by the Guardians in the Workhouse grounds, at a cost of 1,450*l.* The home affords accommodation for ten nurses, and has been built from the design of Mr. S. Spencer, architect, Clayton and Great Horton.

NEW WORKS AND OFFICES, LEEDS.—The new engineering works and offices of Messrs. Graham, Morton and Co., Leeds and London, were designed by Mr. Maurice Graham,

managing director to the Company. The length of the offices is 270 ft., the width 41 ft. The site being a slope, advantage is taken of the slope at the lower end to provide a basement divided into several rooms used for subsidiary offices, mess-rooms, reading-rooms, and stores. The hot-water heating apparatus for warming the whole building is situated here. Light is admitted by windows just above the level of the pavement. With the exception of the basement offices, all are on one level. The main entrance hall is at the centre, dividing the building into two parts, that on the right containing the drawing office, with its various departments (estimating and inquiry, general, colliery, drawing store, and blue-print room). At the extreme end of the drawing office is the weigh office, immediately outside this being the weigh bridge and the works entrance. To the left of the main entrance are seen the inquiry office and waiting-room for callers; to the right and left of the corridor are the different offices. Those on the right comprise the telephone-room, block-storing room, typists' and filing room (the two latter separated from the corridor by a glazed screen), the managing director's room, the board-room, the publicity department office, and the representatives' office. Those on the left, following on from the waiting-room, include the general manager's office, the secretary's and the general clerical office (the last two being separated by a glazed partition, which permits eye-control), and the strong-room. Beyond the offices, and constituting the extreme left corner of the building, is the porter's lodge. Here another entrance is provided leading to an out-building, comprising stables and coach-house. In addition to the main approach there are several entrances from the works, situated to the rear of the offices. The roof of the offices is in three spans, so that light scantlings only are required, two rows of cast-iron columns acting as supports, running the entire length of the building. The centre span is glazed to insure the admission of sufficient light in the middle of the building, the outside spans being covered with blue slates and match-boarded beneath. The whole of the front of the exterior of the building is faced with Accrington plastic bricks.

CO-OPERATIVE PREMISES, SOWERBY BRIDGE.—New premises, erected by the Sowerby Bridge Industrial Society, were opened on the 5th inst. The new buildings, the total cost of which will be about 5,000*l.*, are from the plans of Mr. Medley Hall, architect, Halifax.

NEW BUILDINGS IN SOUTHWARK.—It is proposed to erect a building for a mission hall and home of rest for young blind women upon a site in the Borough-road which has been secured from the Corporation of the City of London. The new buildings will be known as "Hampton Mission." — Lord Llangattock and his son, the Hon. J. M. Rolls, have agreed to give a site at the junction of the New and Old Kent roads for the purposes of the proposed free public library in that quarter of the Borough of Southwark.

COVENTRY AND WARWICKSHIRE HOSPITAL.—The special Committee appointed to consider the question of extensions necessary at the Coventry and Warwickshire Hospital having prepared a report for presentation to the General Committee, the members of both Committees met on the 26th ult. to discuss the matter. According to the report, the operating theatre is entirely obsolete; the domestic accommodation is quite insufficient; the kitchens, etc., are too small; the mortuary and *post-mortem* rooms are inadequate, and the ventilation is very deficient. In considering the question of extension, the report continues: "the Committee are of opinion that the only course to pursue is to prepare a comprehensive scheme, in which due provision is made for supplying all of the deficiencies indicated above." In concluding their report the Committee suggest that the proper order in which the work should be undertaken might be as follows: (1) To purchase the property adjoining the hospital formerly used as a malt-house, and to make such alterations as may be necessary for the purpose of rendering it suitable for a laundry. To build a chimney stack and put down a boiler or boilers of sufficient capacity to provide the necessary hot water and steam for the whole of the buildings. Also to erect such machinery as may be considered useful, to be driven either by a steam engine, or, alternately, by electric motors. (2) To build a new mortuary. (3) To erect a new ward block and kitchen. (4) To make the necessary structural alterations to the existing block. (5) To provide a nurses' home. (6) To provide a proper out-patient department. The approximate cost of the whole of the improvements is estimated at 27,500*l.* At the meeting it was ultimately decided to pass resolutions recommending to the Governors that an extension of the hospital should be made on the present site, and that the Committee should be authorised to obtain competitive architects' designs and to offer a suitable premium. A Sub-Committee was appointed to consider details, and a vote of thanks was passed to Mr. Albert Herbert, of Messrs. Tait and Herbert, Leicester, for valuable assistance rendered in the drawing up of the tentative plans comprised in the Extension Committee's report. The Committee considered at the meeting the part of the scheme which related to the building of a proper mortuary at an estimated cost of from 500*l.* to 600*l.*, and, after a brief discussion, a resolution empowering the Extension Committee to carry out the necessary conversion of the malt-house, which they decided to purchase, into a laundry, and to build the mortuary, at a total estimated cost of 2,000*l.*, including the purchase of the site, was carried *nem con.*

HAMMERSMITH POOR LAW OFFICES.—The opening of the new offices, receiving home for children, and out-relief department in connexion with the Poor Law Union under the jurisdiction of the Hammersmith Board of Guardians took place on the 3rd inst. The new buildings have been erected in three distinct blocks. The Board's offices, which form one block, face Goldhawk-road, are Renaissance in style, executed in Portland stone. The receiving home for children and the out-relief department form the two remaining blocks, with their main entrances in Cathnor-road. The elevations of these buildings are of plain brick. The total cost of the work, including the boundary walls and roadway, etc., amounts to the sum of 23,160*l.* Messrs. Chas. Dearing and Son, of Halliford-street, Islington, have executed the main contracts, amounting to 19,082*l.*; Messrs. Benham and Sons, Ltd., the heating contracts; Mr. George Wimpey, the boundary walls; and Mr. William Winn, the wiring and fittings for electric lighting, etc. Mr. J. Henry Richardson, of the firm of Richardson and White, of Hammersmith, was appointed by the Board of Guardians as architect to prepare the necessary specification and plans and superintend the erection of the buildings. Mr. Samuel A. Stanger, of the firm of Messrs. C. Stanger and Son, Finsbury Pavement, E.C., acted as quantity surveyor, and Mr. R. Manser acted as clerk of works.

BUSINESS PREMISES, NEWCASTLE-ON-TYNE.—New business premises have been erected in Northumberland-street, Newcastle. The building has been constructed of fireproof materials throughout, and has lifts of the "Otis" type. Messrs. Oliver, Leeson, and Wood are the architects.

PUBLIC BATHS FOR KILBURN.—On Tuesday Willesden Urban District Council instructed the engineer to prepare plans and estimates for public baths (swimming bath and slipper baths) to be erected on a site in Stafford and Leinster roads, Kilburn. A special Committee was authorised to inspect buildings of this class in various parts of London.

COUNTY LUNATIC ASYLUM, LEICESTERSHIRE.—Col. A. G. Durnford, R.E., one of the Inspectors of the Local Government Board, held an inquiry at the County Rooms, Leicester, on the 4th inst., into the application of the Leicestershire County Council to borrow a sum not exceeding 214,470*l.* for the purpose of providing their share in the cost of the new lunatic asylum for Leicestershire and Rutland, at Narborough. Mr. S. P. Pick, consulting architect, gave particulars of the estate on which the asylum is to be built. It consists of 184 acres, and is chiefly pasture. The buildings which had been sanctioned by the Lunacy Commissioner provided for 688 patients in the main blocks, including sixty, thirty men and thirty women, under the charity attached to the asylum. Sanction had also been given to the erection of additional blocks to accommodate 224 additional patients, making a total of 912. Besides this there was the ordinary accommodation for the staff, and an isolation hospital. The water would be obtained from the Leicester Corporation, and Worthington pumps would be fixed on the main to increase the pressure in case of fire. The building would be lighted by electricity, manufactured on the estate. An agreement had been come to whereby a railway line was to be built from the London and North-Western mineral line running close by into the asylum grounds. This would give access to both the London and North-Western and Midland systems, the line from which the branch was to be made being a joint one. There was no opposition to the application.

STAINED GLASS AND DECORATION.

NEW WINDOWS, HOARWITHY CHURCH.—Last week five memorial windows were unveiled in Hoarwithy Church, Herefordshire. They were executed in the studio of Mr. H. G. Murray, of London, from the design of Mr. J. P. Seddon, the architect of the church. There is a large central panel with a figure in each light, and smaller panels above with emblematic figures. In the main panel of the central window is Our Lord as "The Light of the World," in a white robe with a blue mantle. The right hand is raised in blessing, while in the left there is a lamp shining forth as a symbol of the title, "Lux Mundi." The background is a varied yellow, gradating into almost ruby tones in parts. In the circular panel above is a Cross in golden yellow, with the letters "Alpha" and "Omega" beneath the arms of the Cross, these being on a blue ground. In the adjacent windows on either side, which are the same size as the central one, are the figures of St. Mark and St. John respectively, on varied blue backgrounds, St. Mark in a golden mantle with pale-ruby lining, St. John in a yellow mantle lined with purple. The two outermost lights have figures of St. Matthew and St. Luke, the former with a mantle of turquoise blue with buff lining thrown over a white robe, the latter with a full blue mantle lined with pale brown over a white robe. In the circles above are the emblems of the saints bearing labels with inscriptions in each case. A brass tablet bearing an inscription is let into the wall below the windows. The total cost of the work was 150*l.*

MEMORIAL WINDOW, HONITON CLYST.—A new memorial window has been placed at the east end of the north aisle of St. Michael's Church, Honiton Clyst. The window consists of three lights, and has for its subjects the virtues of Faith, Hope, and Charity. Messrs. F. Drake and Sons, Exeter, were responsible both for the design and erection of the memorial.

APPOINTMENTS.

ARCHITECT TO THE EDUCATION COMMITTEE, SURREY COUNTY COUNCIL.—Messrs. Jarvis and Richards (London) have been appointed Architects to the Education Committee of the Surrey County Council.

BURGH SURVEYOR, TRANENT, HADDINGTON.—Out of seventy-five applicants for Tranent Burgh Surveyorship, Mr. A. T. Lunn, of Edinburgh, has been appointed.

COUNTY EDUCATION ARCHITECT, CARMARTHENSHIRE.—At a meeting of the Carmarthenshire Education Committee at the Guildhall, Carmarthen, on the 5th inst., Mr. William D. Jenkins, of Llandilo, was elected County Education Architect, at a salary of 200*l.* a year and 25*l.* travelling allowance, out of ninety-four applicants.

FOREIGN.

FRANCE.—The Achille Leclère prize in architecture has been awarded by the Académie des Beaux-Arts to M. Adolphe Thiers, a pupil of M. Pascal. The subject was "A staircase in a large museum." —— The department of L'Assistance Publique intend to rebuild the hospital of Aubervilliers, for contagious diseases, at a cost of nearly two million francs. ——An exhibition of eminent French painters of the XVIIIth century, from Watteau to Fragonard, is to be organised at the Grand Palais on the Champs Elysées, from May 15 to June 15.——The cleansing of the ponds and moat at Chantilly is to be undertaken this year. It is supposed to be done every fifty years, and requires an expenditure of about 300,000 francs. ——The international exhibition of St. Etienne will be opened on April 15. The buildings, on the Place Carnot and the Boulevard Jules Janin, are designed by M. Bernard, architect to the Department of the Loire.——M. Sauvageot has been appointed Inspecteur-Général des Edifices Diocésains, in place of the late M. Corroyer.——The Nouveau Paris Committee has decided on organising an exhibition of balcony flower decorations, to be judged from May 21 to 29 next. ——The Minister of Public Works is engaged on the study of a scheme for a high-road from Thonon to Nice. It is to pass by the Col de Mégère, Albertville, Moustiers, Barcelonette, Col de Cayolle, and Puget-Theniers.

GERMANY.—It has been decided to erect a monument to Conrad Wilhelm Hase at Hanover. New Technical Schools are to be built at Hanover on the site now occupied by a group of buildings used for military purposes.——The sculptor Rudolf Maison died at Munich on February 12, in his fiftieth year. Maison has left many proofs of his artistic skill in different parts of Germany, and his monument to the Emperor Frederic is to be unveiled at Berlin next year.——It has been decided to erect new buildings in the older parts of Frankfort in a style which will as far as possible agree with the architecture of the ancient buildings.——At the Art Exhibition which is to take place at Dresden this year the architects Professor Graff and Herr Wilhelm Kreis will display artistic gardens designed after the style in vogue at the beginning of the XIXth century and that in use at the present day respectively.——Dr.

Wilhelm Schell, for forty years Professor of Mechanics at the Technical School at Karlsruhe, died there on February 13 in his seventy-eighth year.

AUSTRIA.—The Church of St. Ruprecht, Vienna, is to be restored, not only to ensure the safety of the building, but also that certain portions in Romanesque and early Gothic style that have been built up may be exposed.——The memorial which stands at the grave of those who were killed at the burning of the Ring Theatre in Vienna is to be restored at a cost of 2,500k.——The High Bridge in Wipplinger-street, Vienna, has been rebuilt, and is shortly to be reopened; the work occupied eight months, and was carried out under difficult circumstances.——A large concert hall is to be built at Karlsbad at the end of this season.——A pontoon bridge is to be built across the Eger at Meierhöfen, so that the Karlsbad Town Council can at any time reserve the iron bridge for carriage traffic alone.——The Ministers of Education and Finance at Vienna have received a deputation from Brünn, requesting that the new Technical Schools in that town should be built as soon as possible; the plans of the building are now in progress.——It has been decided to erect a monument at Graz to the Austrian General, Wilhelm, Duke of Würtemberg; a committee has been formed to carry out the work, which the sculptors Johannes Raszka, Georg Winkler, and Richard Jakitsch have been invited to attend.——A Convalescent Home for Children is to be built near Vienna.——The memorial to Charlemagne, which is to be executed by the sculptor Professor Weyr, and which is to be placed in the Church of St. Peter in Vienna, will take the form of a representation in relief of the legend which connects Charlemagne with the founding of the church.

MISCELLANEOUS.

BLUE AND WHITE PRINTS.—Mr. W. Tylar (Aston, Birmingham) sends us a sample of a liquid which he calls "Ferrobleach," the object of which is to write in white on blue-and-white print paper. The writing does not show white till a minute or two after writing, when it comes out a clear, strong white, and does not spread. It seems very useful for its purpose.

OBSTRUCTIONS THROUGH DELIVERY OF BARRELS, ETC., ACROSS FOOTWAYS.—The Local Government and Taxation Committee of the London County Council reported as follows at the meeting of the Council last week:—"On February 24, 1903, we reported upon the question of the obstruction caused by the loading and unloading of barrels, coals, etc., across footways. We then stated that the Home Secretary had expressed the opinion that a by-law could not be made by the Council under section 23 of the Municipal Corporations Act, 1882, in view of the fact that the matter was already dealt with by the Metropolitan Streets Act, 1867, but that he would be prepared to consider proposals for an extension of the 'special limits' of section 15 of the latter Act, *i.e.*, the lists of streets fixed by him within which no coal may be loaded or unloaded and no casks (other than those containing wine or spirits) may be lowered or drawn up by means of ropes across public footapths between the hours of 10 a.m. and 6 p.m. We consulted the Metropolitan Borough Councils with regard to the matter, and some of them sent lists of streets for inclusion within the 'special limits,' but the replies received from others showed such a diversity of opinion that the Council resolved that, when the lists of streets specified by the Metropolitan Borough Councils were transmitted to the Home Secretary, he should be informed that the hours specified in the Act were unsuitable, and that steps should be taken for an amendment of the law. The Home Secretary approved the lists, subject to some alterations and additions, and invited further observations. The remarks of the Borough Councils were, however, practically reiterations of their former views, and, in these circumstances, we came to the conclusion that it would be better for the whole question to be adjourned pending the issue of the report of the Royal Commission on Locomotion and Transport in London, before whom evidence on the subject was given on behalf of the Council. We have now to report the receipt of a letter from the Home Secretary stating that no action will be taken until the Royal Commission shall have made its report."

CHIMNEY-POTS. — Messrs. Sankey and Son send us a description and section-illustration of their improved "Louvre Chimney-pot." It is made, we presume, in fireclay (material is not stated); the louvres are deeper than usual and slightly concave in section, and are divided into sections by six vertical diaphragms, with the idea of concentrating and collecting the draught from whatever quarter the wind blows. None of these contrivances can be depended upon to act always in preventing down-draught, but this seems likely to be one of the most effectual.

DRAWING PENCILS.—Messrs. L. and C. Hardmuth, Austria (no other address), send us a specimen of their "Koh-i-noor" pencils, which appear to have obtained high awards at various exhibitions. The specimen sent is an "H.B.," and is certainly an admirable drawing pencil of its class. Whether we should agree as to all the superiority claimed for these over all or most other pencils it is difficult to say from a single example of one quality only: we would have to try some of the different and softer qualities also to arrive at a general impression. The "H.B." is an excellent architects' pencil for fine drawing, and seems to rub out easily. It is a hexagon section, which we wonder is not now adopted by all makers, considering that pencils which are apt to roll off the drawing-board cause so much trouble.

THE LATE MR. SAXON SNELL.—Mr. Henry Saxon Snell, F.R.I.B.A., of Lancaster Lodge, Amersham-road, Putney, who died on January 10, aged 74, left estate of the gross value of 50,255*l.*, with net personalty 41,860*l.* He bequeathed 100*l.* to the Architects' Benevolent Society, and 750*l.* each to the Royal Institute of British Architects and the Architectural Association and Sanitary Institute, of which the income of 700*l.* is every third year to be devoted to a scholarship or prize, to be called the Henry Saxon Snell Scholarship or Prize, to be applied as may be deemed best to encourage a study of the improved design and construction of hospitals and of convalescent homes, and of asylums for the aged and infirm poor, and improvements in the construction or adaptation of sanitary appliances.

MIDLAND MUNICIPAL OFFICERS' ASSOCIATION.—The fourth annual dinner of the Midland Municipal Officers' Association took place on the 5th inst. at the Great Western Hotel, Birmingham. The President (Mr. A. D. Greatorex, Borough Surveyor of West Bromwich) was in the chair, and among the local gentlemen present were the Mayor (Councillor A. G. Turley, J.P.), Mr. H. E. Copp (Electrical Engineer), Mr. A. J. Pearce (Principal of the School of Art), Mr. Hodson (Manager of the South Staffordshire Tramways), Councillors F. Lempriere and S. Adkins (Handsworth), Councillor F. G. Peake (Chairman of Tipton District Council), Mr. A. Cooke (Oldbury), Mr. T. H. Negus (Castle Bromwich), J. Price (Birmingham), and J. A. Budge. The Mayor of Sutton Coldfield (Councillor R. H. Sadley), proposed the toast of "The Midland Municipal Officers' Association." Such an association was of the highest benefit to those who represented the different municipalities in the district. They were only the ornamental heads, and knew nothing of the troubles and responsibilities of the work of their officers. They were very fortunate in the Midlands in having an association of this kind, as it was the means of bringing things to a practical head. Mr. Greatorex, in replying to the toast, said municipal officers to-day were better trained and more qualified to discharge the duties they had to perform, and different Councils and Corporations must recognise that it paid them to give them fair and remunerative salaries. The objects of the association were to bring municipal officers into closer touch with one another, and by the reading of papers at their meetings and the discussions which took place upon them they all gained information which benefited them in the responsible duties they had to perform. They had the privilege of paying interesting visits to works which were in progress and manufactories, which had been to their benefit and the benefit of the Corporations they had to serve. Another object the association had in view was to get passed a Superannuation Bill for Municipal Officers. The principles of the Superannuation Bill were not by any means new, as the Civil Service, the Army, Navy, and Poor-Law Officers all had superannuation schemes, and they thought municipal officers should also have the benefit of some such scheme.

COMMEMORATIVE TABLET, NEWCASTLE.—A commemorative tablet is to be placed in the banqueting hall in Jesmond Dene, as a record of the gift of parks to the city of Newcastle by the late Lord Armstrong. The tablet is designed in low relief executed in bronze, and consists of a panel, on which a description is written in raised letters. Above this is a medallion of Lord Armstrong, and on either side a panel. Mr. R. Appleby Miller designed the tablet.

THE FATAL FIRE IN THE CITY.—Dr. Waldo, the City Coroner, concluded his inquiry on the 8th inst.. at the City Mortuary, Golden-lane, touching the deaths of the victims of the fire in Duke's Head-passage, Paternoster-row, early on the morning of February 25. Mr. G. Fordham, the occupier of the premises, said the ground floor was used as a shop and bar, the walls being match-boarded at the bottom and painted and grained. There was a skylight in the roof, 2 ft. by 8 in., and between ten and twelve feet from the landing. There was also a trap door in the roof of one of the girls' bed-rooms, it being about 2 ft. by 6 ft. square. He had been through it many times. A pair of wooden steps were kept in the bedroom, and by means of those step the trap-door was reached. Police-constable Knights, who was on duty in the neighbourhood of the fire, in the course of his evidence, described the arrival of the fire-escape from St. Martin's-le-Grand, and said it came down Paternoster-row as some posts prevented it from coming into the court. Sergeant Parton said the street posts were placed at one end of the passage to prevent the passage of trucks and the consequent obstruction to passenger traffic. Superintendent Francis pointed out that the place in question was a footway, and people were not allowed to run trucks on the footways. The object of placing the posts there was to prevent the place as a thoroughfare from being used by trucks common to the neighbourhood, namely, heavy box trucks. A fireman named Montague described the difficulties he experienced in getting a wheeled escape to the actual scene of the fire. The overhanging buildings in the neighbourhood were also obstructive. The jury returned a verdict of Accidental Death from Suffocation, and added there was not sufficient evidence to show how the fire originated. They further expressed the opinion that the City authorities should have full powers to inspect all buildings, and compel owners to supply proper means of exit to the roof by fixed ladders or otherwise, and also that for the safety of the residents in Duke's Head-passage the authorities should remove the pillars at the Ivy-lane end, and should demolish the old houses in order to have a proper thoroughfare from Ivy-lane to Paternoster-square.

SOUTHAMPTON TOWN HALL SCHEME. — The Municipal Buildings sub-Committee have considered plans and statements, and have decided to recommend that municipal buildings, costing an approximate sum of 75,000*l.*, would be sufficient to meet the accommodation requirements of the whole borough staff, including education department, as well as providing police court and police and fire-brigade accommodation, and that a very large economy of time and labour in every way would thus be obtained. The Committee unanimously adopted the report of the sub-Committee, and resolved to recommend the Council that new municipal buildings be provided to accommodate the various departments of the Corporation, and including police-court, police, and fire-brigade accommodation, at an estimated cost of 75,000*l.*, on a portion not exceeding two acres of the West Marlands, subject to Parliamentary powers being first obtained to appropriate the land for that purpose.

SOME OLD GLASGOW BUILDINGS.—A meeting of the Architectural Section of the Royal Philosophical Society of Glasgow was held on the 7th inst. in the Rooms, 207, Bath-street—Mr. Macwhannell, President of the Section, in the chair. A paper, entitled "Some Old Glasgow Buildings: Historical and Descriptive," was read by Mr. Alexr. Gardner, hon. secretary. Taking Glasgow about 120 years ago, the lecturer, after a short but graphic description of the city at that date, proceeded to describe the principal buildings then existing possessed of sufficient interest either on account of their architectural features or their historical associations. Beginning at the Cathedral, special attention was given to the "western towers," which unfortunately were removed in the middle of the last century, much to the regret of all antiquarians and persons of taste. The chief historical events connected with the Bishop's Castle, the last vestiges of which were removed about 1790, next claimed attention. The erection of the old College buildings in the High-street was begun in 1632, and completed in the following century, with the exception of the Hunterian Museum. The Tolbooth at the Cross, the site of which had been occupied by an earlier gaol, or tolbooth, known as the Pretorium, was erected in 1626, and removed in 1817, with the exception of the fine old tower now known as the Cross Steeple. The Tron Church Steeple, abutting as it still does on the south side of the Trongate, was built in 1637, and for some time contained the "tron," or public weighing machine, from which it took its name. Hutchesons' Hospital, founded by the brothers George and Thomas Hutcheson, was built in 1641 at a cost of 26,000*l.* Scots, and taken down in 1795 to allow of Hutcheson-street being formed. The stately Shawfield mansion, built in 1711 by David Campbell of Shawfield, was famous in the annals of the city as the scene of the malt tax riots in 1725, and as the headquarters of Prince Charles Edward when he spent ten days in Glasgow in 1745-6 after his retreat from England. The Merchants' Hall in the Bridgegate was erected in 1651-9 from designs by Sir William Bruce,

of Kinross, afterwards architect to Charles II. The picturesque old steeple still remains as one of the landmarks of old Glasgow, and it was interesting to know that it was due to the successful pleading of the present Lord Provost that the Town Council stayed their hand when its destruction was meditated. St. Andrew's Parish Church, famous for the so-called "flat arches" of its fine portico, was begun in 1740, and finished sixteen years later. The Saracen's Head Inn in the Gallowgate, built 1755, was for long the fashionable hotel of the town, and was visited by Dr. Johnson and Boswell on their return from the Hebrides, Robert Burns, Wordsworth, and Coleridge, and many other notable personages.

Legal.

THE FALL OF A CORNICE.

MR. JUSTICE DARLING tried a case in the King's Bench Division on Wednesday and Thursday last week, in which Mrs. Louisa Brooks claimed damages for the loss of her husband, who met his death through the fall of a portion of the cornice in front of the building of Messrs. Blaiberg, Upper-street, Islington.

Mr. Morton Smith, Mr. Dwyer, and Mr. Alexander (instructed by Messrs. Lickorish and Co.) appeared for the plaintiff, and Mr. Foote, K.C., and Mr. Spokes (instructed by Mr. Richard Barnes) were for the defendants.

On the morning of June 1 last, following the great storm of May 31, a piece of the cement cornice fell, killing the husband of the plaintiff and injuring his brother.

The building had been erected about the year 1886. The cornice was of very slight projection, with a core of brick and stone. A length of about 8 ft. broke away from the cement of the projecting member of the cornice and fell on to the pavement.

Mr. Lovell, a builder, who had been employed to repair the cornice, said that he considered that it had not been built well, but admitted, in cross-examination, that he had told a different tale to the defendant's solicitor, which had been taken down by the solicitor's managing clerk.

For the defendants, Mr. Henry Lovegrove, District Surveyor of South Islington and Shoreditch, stated that in consequence of a telegram from the London County Council he carefully examined the cornice, and struck the remaining 50 ft. with considerable violence, and was so convinced of its soundness that he did not consider a hoarding necessary. Taking all the circumstances into consideration, he considered it possible that the cornice had been struck by lightning.

Mr. Gilbert H. Lovegrove proved that he had made a full-size section of the cornice, which he produced, showing that no portion of the core had broken off.

A doctor of science proved that the accident followed one of the most severe storms in North London within his memory, and thought that it was possible for the electric current to have struck the cornice on its way to some iron rails and brackets immediately below.

The jury were locked up for nearly three hours, and were discharged without giving a verdict.

BELVEDERE BUILDING DISPUTE.

THE case of Bradford and another *v.* Nightingale and others came before Mr. Justice Buckley sitting as an additional Judge of the King's Bench Division on the 4th, 5th, and 9th insts.

Mr. Witt, K.C., and Mr. Drake appeared for the plaintiffs; and Mr. Radcliffe, K.C., and Mr. G. A. Scott for the defendants.

Mr. Witt, in opening the case, said the plaintiffs were artificial stone manufacturers, and the action was brought to recover the balance of an account for laying a floor and for supplying ballast, cement, sand, and other stuff. The original defendant was the late Mr. Benjamin Nightingale, a well-known builder, and his executors had been joined as defendants to the action. The question his Lordship would have to try was whether the work was well done so that the plaintiffs earned their money or so badly done that not only ought the plaintiffs not to be paid, but that the defendants ought to get some damages from the plaintiffs, for which defendants counter-claimed. Mr. Nightingale had entered into a contract to build for the British Fire Lighting Co. a factory at Belvedere, Kent. The original contract was dated September 28, 1901.

His Lordship: When did you begin to lay the floor?

Mr. Witt: I think on June 18, 1902.

His Lordship: When did you complete the work?

Mr. Witt: On August 27, 1902.

Mr. Witt then read a voluminous correspondence which had passed between the parties bearing on the subject.

George Smith, examined by Mr. Witt, said he was foreman for Messrs. Nightingale at the time the job was done. He had sole charge on behalf of Nightingale's of the job. The Portland cement and sand used for the floors was satisfactory. He remembered the plaintiffs men laying the floor, and they did it in a very satisfactory manner. The proportions of cement and sand used were properly measured. Before the floor was properly set, the Fire Lighting Co. moved machinery over the floor on rollers.

Cross-examined.

He had not seen the floor since he had left the works. He did not know that the floor was hard in parts and soft in parts. It was a common thing to leave a cement floor some hours before it was "trowelled off." The length of time a floor could be left before it could be trowelled depended upon the nature of the cement used, and whether it was hot or cool.

Henry Martin, clerk of the works on the job, examined, said he supervised the laying of the floor by the plaintiffs in the machine-room. The architect tested the Portland cement and sand used by the plaintiffs, and he approved of the stuff. The plaintiffs did their work in a thorough manner. Mr. Dawson, the architect, had asked him whether he could assign any reason for the floor going wrong. Witness said he could not. He was not on the works to see the floors completed. He left before.

Cross-examined.

That was the only job on which he had acted as clerk of the works. He had had, however, thirty years' experience in the building trade. He could not account at all for anything going wrong with the floor.

Re-examined.

Mr. Dawson had testified as to his ability in his work.

Henry Mason, examined, said he was in the plaintiffs' employment as a plasterer and floor-layer. He had had fifteen years' experience in the work. He was employed on the work in question from start to finish. The best workmanship was put into the floors. He saw machinery moved on the floor in question before it was set, and he complained about it.

Cross-examined.

He had not seen the floor since he left. He could not account for the floor going wrong.

Edward Wibley, a plasterer and floor-layer, in the employ of the plaintiffs employed on the job, corroborated the evidence of the previous witness. He said that the sand and cement used were very good indeed.

Mr. Chas. Norris, examined, said he carried on business as a sand and ballast merchant at Erith. He supplied Mr. Bradford with the Portland cement and ballast. The cement came from the West Kent Portland Cement Co. It was the same as was used by Nightingale's throughout the whole construction of the factory. From what he saw of it it was excellent, and was approved and passed by Mr. Dawson. The sand was machine-washed pit sand, and was the best that could be made. It was passed by the architect before it was allowed to be used.

Cross-examined.

He took care to see that the cement that the plaintiffs had was the same as was supplied for the rest of the building.

Mr. Walter Bradford, examined, said that in 1902 he was in the employment of the plaintiffs as foreman of the work in question. He had had ten years' personal experience in laying floors. He thought the floor-laying was carried out satisfactorily. The proportions of sand and cement were as specified, and the quality of the cement and sand used was good.

Cross-examined.

The cement was not "spread" in the present case. He had handled the cement to see if it was fit for use. There was nothing in the specification to say that the cement should be kept for a specified time. All the sand used on the job was, as nearly as possible, the same.

Mr. Frank Bradford, a partner in the plaintiff firm, examined, said that before the contract was entered into, he suggested to Mr. Nightingale that a sand and cement floor was not suitable for the use for which it was required. He had examined the floors in question in consequence of complaints, and he had taken samples of the floors and had had them analysed. The analysts reported that the proportions of cement and sand used were as follows:—Cement, 1; sand, 2.5. In his opinion all the floors, except in the machine-room, were in excellent condition. In the machine-room the floor in parts was worn away, but that appeared to be in consequence of heavy machinery having been moved about on it before it was set. Fifty-eight tons of cement, 59 yards of washed sand, and 130 yards of ballast for the lower 6 in. of the floors were used on the job.

Cross-examined.

In an interview that he had with Mr. Dawson after the complaint, he had said that there might have been something wrong with the cement, but, on having the cement analysed, it was proved to be all right. He never said to Mr. Dawson that if he were pressed he would have to take up and relay the floor for the credit of his firm. He never admitted liability to anybody. The most important point they had to keep in their minds was to get cool cement. It was not usual to specify that cement should be "spread" for some weeks before it was used. People like the London County Council might have such a stipulation in the specification.

Mr. Radcliffe: Do you suggest that they are hard-hearted?

The Witness: No; but they are expensive.

Mr. Geo. Edw. Holman, an architect and surveyor, of No. 6, King's Bench-walk, Temple, gave evidence as to having had a large experience in these floors. He had inspected the floor in question. He found the floor worn away in places by the side of the machines and where the traffic went through the doorways. The material used was quite satisfactory, but such material was not fit for a warehouse floor at all.

Cross-examined.

The floor was only soft in places where its surface had been worn or had had its surface disturbed. A cement and sand floor was no good when there was much traffic, and certainly not a 2 to 1 cement and sand floor.

This being the plaintiffs' case, Mr. Radcliffe, on behalf of the defendants, said that the main question, of course, between the parties was one of fact, which was whether or not the floor in question was well laid. The correspondence showed that Mr Nightingale had always said that the plaintiffs were the persons to satisfy the architect for the building owners, and they had better put themselves into communication with him. The correspondence did not disclose that plaintiffs had ever repudiated the suggestion that they were to satisfy the architect for the building owners, but they appeared to have set up that they had satisfied both Mr. Nightingale and the architect. If the correspondence was read it would be seen that Mr. Nightingale throughout had dealt with the matter as though he was not the person really responsible, but who had tried to make the case as light as possible for the sub-contractor.

Mr. W. H. Nightingale, examined by Mr. Radcliffe, said he was for many years in business with his father, who died in July last year. He first saw the floors at the end of September or beginning of October, 1902. On walking over the floors he thought they were very good. He did not try them with a knife. They showed signs of wear. He went down again in February, 1903. He then noticed the floors were not so good. He tried the floors with his knife, and found them partly good and partly soft. Where there was the greatest traffic of all leading into the women's cloakroom the floor showed no, or very little, sign of wear. From what he could see it seemed that either the workmanship or the material used was bad, or that both the material and the workmanship were bad. He thought that a properly-laid floor of cement and sand was suitable for the premises, and would stand the traffic, except that it would show signs of wear where the traffic was exceptionally heavy.

In cross-examination by Mr. Witt, the witness had put to him two letters written by him to the company, in which he stated that the fault of the floors having been worn away was on account of the company having used them before they were quite set, and, while denying liability, offering the company 25*l.* in satisfaction of any claim they might have against them on that head. The witness stated that by doing this he was acting in the best interests of Messrs. Bradford. That was what he thought at the time he wrote the letters. The company had not brought an action against him, but they had not paid him in full.

Mr. C. J. Dawson, an architect of twenty-five years' experience, examined, said he acted as architect for the Firelighter Co. on this job. In consequence of a complaint he received from the company about the floor, he saw Mr. Bradford on the matter. Mr. Bradford could only account for the floor being defective by saying that there must have been something wrong with the cement, and Bradford further said that, for the reputation of his firm, the floor would have to come up. Witness asked Bradford who was going to do that, and Bradford replied that if Mr. Nightingale forced them they must do it. In his opinion the floor in question was very bad. The floor was not wearing as a properly laid floor should do, or as such a floor of properly mixed cement and sand in the proportions of 2 to 1 should do.

Cross-examined.

The floors seemed soft all over more or less. Smith and Martin were both capable men. He had heard their evidence. He saw nothing wrong in the way the men worked on the floors. Good sand and good cement used in the proportions specified, with proper workmanship, should have made a hard, substantial floor.

Jas. Fraser, chief assistant with Mr. Nightingale, also gave evidence in support of the defendants' case.

Mr. Wm. Woodward, an architect, said he thought the cement used by the plaintiffs, not having been "spread" before it was used, was used too hot. That would have accounted for the defects in the floor which he noticed. He did not think that the defects he noticed were caused by reason of heavy machinery being moved over the floor.

Learned Counsel having addressed his Lordship on behalf of their respective clients,

His Lordship, in giving judgment having stated the facts, said the first question of fact he had to decide was whether the cement and sand used by the plaintiffs were fit for the job, and the second was whether the workmanship used was fit for the job. There was no evidence to show that the materials used were not proper in every respect. As regarded the workmanship, the evidence was that the people who were on the job watching it had nothing to complain of. There was no evidence by the defendants to contradict this. The evidence given on behalf of the plaintiffs was that it could not be expected that a floor of the kind laid would stand much wear, and his Lordship thought that view was correct. The fact was that the floor was interfered with before it properly set. That possibly was the solution of why the floor went wrong. He, therefore, found as a fact that the work was done by the plaintiffs according to the specification, and gave judgment for the plaintiffs for 118*l.* 16s. 9d., with costs, and judgment for the plaintiffs on the defendants' counter-claim, with costs.

ACTION BY THE NORFOLK COUNTY COUNCIL.

MR. JUSTICE WALTON, in the King's Bench Division, on the 5th inst., delivered a considered judgment in the case of the Norfolk County Council *v.* Green and another, an action by the plaintiffs against Mr. Edward Green, of North Walsham, and Mr. E. H. Green, of Antingham, Norfolk, timber merchants, to recover 677*l.* odd in respect of extra expenses incurred in repairs to high roads caused by alleged extraordinary traffic over them by reason of the defendants using a traction engine to haul large quantities of timber from the Beeston Estate to North Walsham and other railway stations. The defendants' contention was that the traffic was not "extraordinary" within the meaning of the Act of 1878, but only the ordinary traffic of a district where there were periodical fellings of timber. Defendants further said that the county rates had been paid by the owners of the wood for many years whilst the timber was growing, and that they held a licence from the County Council to use the traction engine, for which they paid 5*l.* There was a further plea by the defendant Mr. Edward Green, that he was not a partner in the firm when the alleged injury to the roads occurred.

Mr. Justice Walton, in giving judgment, said he should hold that the traffic in question was "extraordinary" within the meaning of the statute, but the plaintiffs were not entitled to the whole amount claimed, as the statute provided that the action must be brought within twelve months of the damage being done. The writ was not issued until August 4, 1902, and therefore the plaintiffs could not recover in respect of any damage caused prior to August 4, 1901. After the latter date very little damage was done, and he thought he should not be going far wrong if he assessed it at 75*l.* He accordingly entered judgment for the plaintiffs for that amount.

Mr. Gregory, on behalf of the defendants, said that, as Mr. Edward Green had retired from the partnership in 1900, he was entitled to judgment against the plaintiffs with costs. The other defendant had paid 110*l.* into court, and, therefore, he would be entitled to the costs of the action, since the date on which the amount was paid in.

His Lordship said that would be so. Mr. Edward Green would have judgment entered for him with costs, and the plaintiffs would recover from the other defendant 75*l.* and costs up to the date when the defendant paid the money into court. After that date the defendant would be entitled to the costs of the action.

A stay of execution was granted on the usual terms, with the view to an appeal.

Mr. Macmorran, K.C., and Mr. Hansell appeared for the plaintiffs, and Mr. Reginald Bray, K.C., and Mr. H. Gregory for the defendants.

TRADE UNION DISPUTE.

THE case of McGuire *v.* Frederick Andrews, Chas. Reynolds, Ernest Boatman, and the Amalgamated Society of House Decorators and Painters (Plaistow Branch) came before Mr. Justice Grantham and a special jury in the King's Bench Division on the 7th inst., an action by the plaintiff, a painter and a member of the City of London Society of House Decorators and Painters, to recover from the defendants, who were respectively the Chairman, Secretary, and Treasurer of the Plaistow Branch of the defendant Association, damages for alleged conspiracy in having, with other members of the Amalgamated Society of House Decorators and Painters, incited Messrs. G. Wright and Sons, contractors of Blackwall, to dismiss the plaintiff from their employment.

The defendants denied the alleged conspiracy, and said that the employment of the plaintiff was the breach of an agreement between Messrs. Wright and Sons and the Amalgamated Society, whereby Messrs. Wright and Sons agreed only to employ men who were members of the Amalgamated Society. Defendants further pleaded that, whatever action was taken by the defendants as officers of the branch, it was a lawful trade combination for which neither they nor the branch could be held liable.

Mr. Ruegg, K.C., and Mr. W. M. Thompson appeared for the plaintiff, and Mr. Robson, K.C., and Mr. Chester Jones for the defendants.

Mr. Ruegg, in opening the case, said the action raised a question of considerable importance to workmen and employers, as it involved the boycotting of the members of one trade union by another union to which a workman did not happen to belong, and dictated to employers as to the men they should employ. The plaintiff had been employed on and off by Messrs. Wright and Sons for the last three years, and on February 2 of last year as he was proceeding to work on the "Star of Australia" Mr. Andrews stopped him, and said he must not go to work on his "ticket," but if he liked to join the defendant society he could go to work the next day. At the same time, two other men, members of the defendant society, were prevented from working with the plaintiff under a threat of being fined 10s. each. Plaintiff refused to join the defendant society, as he would lose the benefit of his union, and, in consequence, he was dismissed by his firm and prevented from getting other employment. The defence was three-fold—a general denial of plaintiff's allegations, and, alternatively, that if Andrews intimidated the plaintiff he had no authority to do so. Further, defendants said that if plaintiff was interfered with, they were justified in getting him dismissed, as Messrs. Wright and Sons had promised to employ only men who belonged to the defendant society.

The plaintiff gave evidence in support of the statement of counsel.

Albert Simpson, foreman at Messrs. Wright and Sons; H. C. Bailey, a painter and a member of the Amalgamated Society of House Painters and Decorators; Mr. John Wright, a member of the firm of John Wright and Sons; Bernard Walsh, and E. Crane, a clerk to Messrs. John Wright and Sons, also gave evidence in support of the plaintiff's case.

At the close of the plaintiff's case Mr. Robson submitted that there was no case to go to the jury. He contended that, in order to bring in the damage suggested, which was more or less general, the plaintiff must show an illegal conspiracy. He submitted that there was no evidence of any conspiracy, though there was evidence that showed that an official of the branch invited the men not to work with the plaintiff.

His Lordship ruled that there was a case to go to the jury.

Mr. Robson intimated that he should not call any evidence on behalf of the defendants.

Mr. Ruegg then addressed the court, submitting that the plaintiff had been deprived of his work in consequence of a conspiracy on the part of the defendant society and the officials of that society, and that the plaintiff was entitled to substantial damages.

Mr. Robson, on behalf of the defendants, submitted that there had not been any conspiracy or intimidation, and that all that was done by the defendants was to exercise their legal rights to say that they would not work with men who did not belong to their organisation, and to induce, if they could, other men not to work with those who did not belong to the organisation. It was, perhaps, selfish, but it was perfectly legal. If it were not, a trade union could not exist. Any man had a right to adopt any method to get business from another man, provided he employed no illegal means in doing it.

His Lordship, having summed up, left the following questions to the jury:—(1) Did defendants conspire to obtain the dismissal of the plaintiff because he was not a member of their Union? (2) Was the plaintiff dismissed from his employment because of the action of the defendants? (3) Did the plaintiff lose work, and what were the damages? His Lordship said that, with regard to the union, the jury could find it liable because the matter had been discussed at the meeting of the union.

The jury returned a verdict for the plaintiff on each question, and assessed the damages at 25*l.*

Judgment accordingly.

A stay of execution was granted on the payment of the money into Court.

CASE UNDER THE PUBLIC HEALTH (LONDON) ACT, 1891.

IN the Court of Appeal, composed of Lords Justices Vaughan, Williams, Stirling and Cozens-Hardy, on the 8th inst., the hearing was concluded of the case of the London and North-Western Railway Co. *v.* the Mayor, Aldermen and Citizens of the City of Westminster, on the plaintiff's appeal from an order of Mr. Justice Joyce in the Chancery Division.

In this case the plaintiffs brought the action for an injunction to restrain the defendants from continuing to trespass upon some premises of the plaintiffs, by permitting a tunnel, staircase and railings, and other works to remain on their land. The facts were shortly as follows:—The plaintiffs in 1866 purchased some land and premises at the corner of Parliament-street and Bridge-street, Westminster, and had rebuilt the premises, a portion of the corner house abutting on Parliament-street being used by them as offices. The defendants had constructed under the centre of Parliament-street public conveniences, the approaches to it being by subways by staircases near the edge of the pavement, one of the entrances being opposite the doors of the plaintiffs' premises. The plaintiffs alleged that this constituted a trespass by the defendants. The defendant's case was, that they had power to do what they had done by virtue of Section 44 of the Public Health (London) Act, 1891. The entrance and staircase of which the plaintiffs complained was to the exent of 2 ft. 9 in., not constructed in the roadway but in the footway, and plaintiffs said this was a trespass on their property, as the Act only vested the soil of the roadway in the defendants, the soil of the footway being vested in the plaintiffs. Plaintiffs further said that defendants had no power to make subways under the street. Mr. Justice Joyce held that the land or soil where the staircase was constructed as to 2 ft. 9 in. in width was the property of the plaintiffs, and being part of the footway not liable to be taken by the defendants for the construction of sanitary conveniences, and therefore he granted an injunction for the removal of this part of the staircase. He said, however, that he thought the soil in question did not belong to the plaintiffs, and if the defendants thought fit they could put the staircase 2 ft. 9 in. further out into the roadway. His lordship further said he could not compel the defendants to restore the old line and curve as it formerly existed, and he suspended the operation of the injunction for six months, to enable an appeal from his dicision. The plaintiffs now appealed.

At the conclusion of the arguments of Counsel, Lord Justice Vaughan Williams, in giving judgment, said he felt great sympathy with the defendants, who, no doubt, desired to do what they thought best for the public. He thought, however, that the defendants had acquired the land in question for purposes not justified by the Act. They had no authority to take land for the purpose of a subway, and he thought they ought to be restrained from so doing. Defendants had, no doubt, power to make an approach to the convenience, and if they had been only providing a convenient access, it might not have been right for the Court to review their discretion. He was of opinion that the appeal should be allowed, and that the injunction ought not to be limited to the excess of 4 ft., but an opportunity should be given to the defendants of making reasonable and proper alterations, and that liberty to apply to this Court should be given.

The other Lords Justices concurred, and the injunction was granted, but its operation suspended, with liberty to apply to this Court. It was also arranged that the injunction should be supended for two months, to enable the defendants to consider whether they would appeal to the House of Lords. If they did

appeal, the injunction was to be suspended pending the appeal.

Mr. Younger, K.C., Mr. Montague Shearman, K.C., and Mr. Eustace Hills, appeared for the plaintiffs, and Mr. Hughes, K.C., and Mr. D. Pollock, for the defendants.

ACTION AGAINST LANDLORDS FOR DEFECTIVE DRAINAGE.

THE case of Voss *v.* the Fulham and Hampstead Property Co., Ltd., came before the Court of Appeal, composed of Lords Justices Romer and Mathew, on the 7th and 8th insts.

Mr. Crispe, K.C. (with him Mr. O'Connor), in opening the case said it was an appeal by the plaintiff from an order of Mr. Justice Walton in Chambers, confirming the order of the Master, setting aside an interlocutory judgment which had been signed in the action, reserving the costs, and referring the action to an official referee. The action was by the assignee of a lessee against the assignee of a lessor for breach of a covenant to maintain and keep the main drain of the premises demised in proper repair and condition, and for the breach the plaintiff asked for damages. After the issue of the writ the plaintiff took out a summons for directions, and an order was made by the Master on the summons that there should be pleadings in the action, and that the case should be tried by a judge and jury. It was not contended in the first instance by the summons from directions either by the plaintiffs or the defendants that this was a case for reference to an official referee. The time for delivery of the statement of defence was on January 1. On January 19 plaintiff signed interlocutory judgment against defendants for default in delivery of the statement of defence. Defendants then took out a summons to set aside the judgment, and the Master made an order that the judgment should be set aside, that the costs should be reserved, and that the case should be referred to an official referee. On appeal, the Judge in Chambers confirmed the Master's order. The learned Counsel submitted that the Master and the Judge had no jurisdiction to make the order, reserving the costs and sending the case to the official referee. The action in question was one of a class which was constantly tried in the courts. It did not involve any local inquiry or any scientific evidence—a surveyor or a builder could give the evidence as to the condition of the drains.

In the result their lordships, without calling upon counsel for the respondents, held it was a proper case for the official referee, affirmed the order of the Master and of the Judge in Chambers, and dismissed the appeal with costs.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

3,378 of 1903.—F. W. JENKINS: *Manufacture of Bricks, Artificial Stone, and the like.*

This invention relates to the manufacture of bricks, artificial stone, and the like. According to the invention, sand is mixed with molasses, the mixture being first submitted to pressure in a mould, and subsequently treated by heat. In carrying out the invention, sand of any kind, such as ordinary seasand or "tailings," is taken and, preferably, though not necessarily, in a dry state, is mixed with molasses, or refuse, from the sugar refineries. The proportions of the mixture may, for example, be 97 per cent. of sand and 3 per cent. of molasses.

3,638 of 1903.—A. N. CHAMBERLAIN (Chairman of Hoskins and Son, Ltd.) and W. L. B. HALL (Managing Director of Hoskins and Son, Ltd.): *Door Stops.*

A door stop, comprising the combination of a guide or rack, a device sliding in or on said guide or rack, and adapted to grip or to be gripped by the guide or rack, one part being fixed to the door and the other part to the door surroundings, and so adapted that the door will be held fast against the pressure of wind and so forth, but will move under manual pressure, said mechanism being capable of use for locking the door when required.

4,271 of 1903.—J. GLOVER: *Struts.*

A strut, or shore, consisting of a bar, or rod, of any suitable material, or section, to each end of which is pivotted a crosspiece, or waling, by a bolt, or pin, passing through the centre of the waling and slotted hole in the strut. The strut has curved ends, or shoulders, which bear directly against pivotted walings, and relieve the bolts, or pivots, of strain when the strut is placed in position. The walings can make any angle with the strut, and thus they can be set parallel to each other and oblique to the strut for insertion between the polling boards of the trench. The strut is tightened in position by driving either of the walings in the direction of its length until square, or nearly square, with the strut. The strut is released by driving the waling back in the opposite direction.

6,910 of 1903.—A. JONES: *A Lifting and Lowering Shaft, with Brake Combined, for Hoists and the like.*

A lifting and lowering mechanism for hoists and the like, consisting in the combination with a gear wheel loosely mounted on the driving-shaft, of a brake, which is capable of end-way movement along, but is incapable of revolving upon the shaft, and which may be moved so as to be pressed and maintained against the wheel with the required degree of pressure either to lock the pinion to the shaft or allow it to turn in relation thereto.

6,914 of 1903.—J. IRON: *Means, or Apparatus, for use as a Fire Escape, or Lowering, or Removing Persons, or Goods from Buildings or other places.*

The apparatus consists of a canvas, or other bag, or receptacle, with framing, or distending rings, or parts, and, if desired, a solid bottom may be provided. The edge of the framed bag may have a flap, or fan-shaped extension, adapted to be held up in front of the entrance to the receptacle to protect the incoming occupant, and, in the case of nervous people, to shield them from a view of the depth to which they are to descend. A ring, or rings, or eyelets, on this flap provides means whereby attachment of lines, cords, wires, or chains, to draw it up, or support it, may be made. The bag, or bucket, is slung on lines, cords, or chains from hooks, or a wooden, metal, or wood and metal stretcher. The bag may be round, or oval, or half round in shape, with a flat side towards the building, or wall, and may be made of strong textile material, rendered non-inflammable by the application of asbetos, slag wool, or the like, or by dressing with cuprous ammonium, or other treatment.

7,877 of 1903.—C. P. SHOWELL: *Casement Adjustable Fastenings.*

This invention relates to casement adjustable fastenings, and refers more particularly to that class of fastening in which the bracket is secured to the moving casement, and to which is connected the stay, or blade, in which are holes, or the like, which may take on to an upstanding peg which is secured to the casement frame. It has been found impossible to make these blades from a drawn, rolled, or extruded strip of metal. In carrying the invention into effect the blade is prepared from the plain strip which has been rolled, drawn, or extruded, to form at its one end a pivot joint, which is then jointed to a member, which is again formed pivotwise and attached to a base plate so that the said member and plate form, as it were, a bracket to be screwed to the moving casement. Hence the blade may thus have two directions of motion at right angles to each other, the first of which serves to lift the said blade from off the pivot peg of the frame when the casement may be pushed out to the required distance. The second pivottal movement from the bracket permits the blade to be brought into position for the pivot peg at any point. Upon the bracket plate means may further be provided for supporting the blade from falling down, which may consist of a radial ring around the joint of the blade, so that the blade may rest thereon.

8,164 of 1903.—T. POTTER: *Concrete Steppings and Seatings for Public Buildings.*

This invention relates to a method of forming armoured fireproof concrete steppings, seatings, and risers for theatres and similar buildings. The usual way of performing this kind of seating is to form wood troughs or frames, one on each side of the riser and on the underside of the seat. The concrete is deposited in the former and on top of the latter in a soft state, and, when sufficiently hard, the temporary wood is removed. By this invention iron sheets, plain or corrugated, and sometimes galvanised, are used in place of wood, bent to shape to form in one piece a frame, or support, for the concrete back of the riser and the concrete seat. These iron plates are left permanently in position. In this way temporary wood casings are only required for the front of the riser, which are removed when the concrete is sufficiently hard. In the concrete is also embedded, when required, small steel rods, bars, or hoops. Seatings, steppings, etc., are claimed to be light, strong, and quickly made by this means.

8,240 of 1903.—C. WILLIS and A. BATES: *Manufacture of Closet Cones, or Connexions.*

This invention relates to the construction of connexions, or cones, whose purpose is to connect inlet, or outlet, pipes to closet basins or earthenware sanitary appliances. By this invention the advantages of both a metal union and a rubber one combined is claimed to be obtained for making water-tight any such connexions. The ordinary method of making a connexion is by means of a rubber taper tube known as a cone, and consists in stretching the small end over the lead pipe and the large end over the collar, or neck, of the basin. As there is a tendency for such cones to rot in the body, the body is made of any suitable metal, brass, or copper, and at either end is inserted rubber in such form as will produce the surest water-tight joint.

8,359 of 1903.—W. HUTTON: *Window Sashes.*

A sliding sash of the type adapted to be swung on hinges for cleaning purposes, which consists in arranging each hinge in two parts, one on the sash and one on the frame, and adapting one part to be normally removed from the path of the other to permit sliding of the sash, and to be moved into the path of the other in order that the sash may be brought to a predetermined position to bring the respective parts into engagement to enable the sash to be swung inwards.

8,611 of 1903.—T. W. TWYFORD (Managing Director of Twyfords, Ltd.: *Urinal Ranges.*

Urinal ranges, built up of stall sections, which consist in providing the front edges of such sections with rebates, or depressions, adapted, on two sections being placed together, to form complete upright channels for the reception of bonding, or key ribs, formed at backs of facing slabs, or mouldings, which are applied and secured to the fronts of the said meeting-parts of the contiguous stall sections so as to break joint between them.

8,617 of 1903.—J. B. TALBOT-CROSBIE: *Condensers, Radiators, and Heat Exchangers.*

Condensers, radiators, and heat exchangers, consisting of chambers, each formed from one or two sheets of metal, having plain, indented, or corrugated surfaces, the said chambers being strung on pipes, and held thereon by means of nuts and distance pieces, the pipes passing through and communicating with the chambers by means of openings formed through the pipes and the distance pieces, at the parts within the chambers, with or without wire gauze or other suitable material, and baffle parts arranged respectively within the chambers and in the outer space between them.

9,102 of 1903.—C. CALAME: *A Level-indicating Instrument, applicable also for use as a Clinometer and Plumb-rule.*

An instrument, comprising a graduated and counter-balanced disc rotatably mounted in a casing provided with a number of pointers, and having a straight or flat base.

9,181 of 1903.—T. W. TWYFORD (Managing Director of Twyfords, Ltd.): *Automatic Flushing Apparatus, principally for Sanitary Purposes.*

An automatic syphon flushing apparatus, which consists in arranging, or disposing, the catch-box which retains the water for restoring the bottom seal after each discharge upon the top of the chamber, or vessel, containing the bottom seal cup, and providing a syphon for conveying the retained water from the said catch-box to the enclosed sealing cup.

14,885 of 1903.—J. RIGBY and W. R. TAYLOR. *Method of Automatically Opening, Closing, Locking, and Unlocking the Doors of Hoists, Lifts, and other similar structures and apparatus therefor.*

This invention relates to improvements in, or relating to, the method of automatically opening, closing, locking, and unlocking doors of hoists, lifts, and other similar structures and apparatus therefore, and consists in means whereby the said operations are effected by the up and down movements of the hoist cage, together with means for locking the strap fork when the said doors are open on any of the landings or room floor level.

23,246 of 1903.—D. F. COLLICUTT: *Level and Plumb.*

A level and plumb, consisting of a body having parallel edges with a circular opening formed through the body, an arbour arranged in the centre of said opening, a weight secured to the arbour and arranged within the opening, dials secured to the body, provided with central openings, through which the arbour projects, pointers carried by the arbour outside of the dials, glass discs secured to the body opposite of the pointers, said glass discs being provided with central bearings for the arbour, and means adapted to be operated outside of the glass discs for arresting the oscillations of the pointers.

27,211 of 1903.—W. G. GAGNE: *Ventilating Cowls.*

A ventilator, consisting of a hollow sphere, having a series of vertical-slotted openings, curved bands outside of said sphere covering said openings and separated therefrom by

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

ventilating spaces, a cylinder extending into the lower portion of said sphere, and a cone-shaped deflector within said sphere extending from the top downward.

28,103 of 1903.—J. W. D. PRATT: *Brick Kilns and the Process of Burning Bricks.*

A construction of kiln and arrangement of flues in conjunction with dampers so that during the process the hot gases are not directly thwarted in their passage by dampers, thus preventing leakage of hot gases or entrance of cold air round the damper slots.

28,781 of 1903.—J. BARDSLEY: *Door Closers and Checks.*

A door closer, the spindle to be operated from the door, and the casing within which said spindle is mounted, combined with the coiled closing spring for co-operation with said spindle, and the cover plate for said casing containing an opening to receive the upper portion of said spindle, said cover plate having the projection constituting a stop to restrain the upper end of said spring in one direction, and said casing having on its floor a stop to restrain the lower end of said spring in the opposite dirction, and said spindle having integral arms in operative connexion with the respective ends of said spring for winding said spring at either end in accordance with the direction of motion imparted to the door.

617 of 1904.—E. ZIEHL: *Mountings for Swinging Windows.*

A window-mounting for swinging windows, which binds the projection of the window sash, keeps it in its open position, and enables the window to be lowered inwards so far that the outside of the window-pane can be cleaned from above in the room, characterised in that a plate is fixed to the window-case, with a rectangularly-bent stay, with a holder having a tapered part at the bottom and a notch in the top and a window-support plate furnished at the bottom with a notch, and carrying at the top a hasp that is let in the notch, which are movably connected by a rivet.

7,905 of 1903.—G. MOORE: *An Iron Trimmer, or Carrier, for Trimmer Joists, to be used in the Construction of Floors of Buildings.*

An iron trimmer, or carrier, to be used in the construction of floors of buildings, formed so as to be readily fixed to long trimmer joists at one end, and kept in position with a bolt, the other end to rest on a stone template bedded on brickwork in the wall.

25,307 of 1903. — G. F. FRY: *Making and Repairing Macadam Roads.*

Making and repairing of macadamised roads, consisting in the use of grouting made of lime or cement, or any other material of the nature of lime or cement, mixed with another material, or used by themselves. The other material may be sand or fine granite, or any other material of the nature of sand or fine granite, or other suitable material, mixed with water and applied with the road material during the process of consolidation.

28,600 of 1903.—W. C. LYON: *Method and Apparatus for Making Concrete Piles.*

A method of making concrete piles, consisting in forming a hole in the ground by means of a former, of filling the former with concrete, hermetically sealing the same, and applying a pressure between the surface of the concrete and the top of the former, whereby the latter will be raised out of the ground, and the concrete forced from the lower end of the former to replace the space occupied by the former.

SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

February 24.—By HEPPER & SONS (at Morecambe).

Morecambe, Lancs.—"The Morecambe Tower Estate" and Pleasure Grounds, area 9,432 yds., *f.* £9,500

February 25.—By W. FOWLER, PEMBERTON, & Co. (at Birmingham).

Corley, Warwick.—"The Corsey Estate," area 445 a. 1 r. 17 p., f. (in lots) 21,620

The "Saracen's Head" Inn, and 8 a. 2 r. 13 p., f. 1,550

February 26.—By FAREBROTHER, ELLIS, & Co. (at Lincoln).

Timberland, Lincs.—"The Timberland Estate," comprising farms, lands, etc., area 800 a. 2 r. 36 p., f. (in lots) 17,871

The "Houghton Arms" Inn, and 50 a. 1 r. 10 p., f., y.r. 65*l.* 5s. 1,780

February 29.—By ARTHUR BARTON.

Lee.—10 and 12, St. Mildred's-rd., u.t. 82 yrs., g.r. 28*l.*, y.r. 145*l.* 1,135

By BRODIE, TIMBS, & Co.

Westminster. — 30, Marsham-st. (s.), area 1,600 ft., f., y.r. 48*l.* 1,500

By COOPER & GOULDING.

Walworth.—Larcom-st., f.g.r. 28*l.*, reversion in 59 yrs. 620

Gunnersbury. — Marlborough-rd., "Nyanza," u.t. 73 yrs., g.r. 9*l.* 10s., e.r. 52*l.* 490

By FIELD & SONS.

Bermondsey.—57 & 59, Beatrice-rd., u.t. 29¼ yrs., g.r. 7*l.*, w.r. 72*l.* 16s. £500

129, Fort-rd., u.t. 35½ yrs., g.r. 4*l.* 10s., w.r. 36*l.* 8s. 295

11, Reverdy-rd., u.t. 35½ yrs., g.r. 4*l.* 10s., w.r. 41*l.* 12s. 305

By W. W. JENKINSON & Co.

Southwark.—2, Rose-alley (warehouse), f., y.r. 35*l.* 595

By F. LONG & SON.

Battersea.—24, Millgrove-st., u.t. 69 yrs., g.r. 3*l.*, w.r. 28*l.* 12s. 180

Stamford Hill.—228, Seaford-rd., u.t. 78 yrs., g.r. 3*l.* 10s., w.r. 18*l.* 4s. 105

Paddington.—6, Dudley-pl., u.t. 34 yrs., g.r. 3*l.*, y.r. 40*l.* 300

By SPELMANS' (at Norwich).

Norwich.—27, 29, and 37, Oxford-st., f., y.r. 39*l.* 568

56, Pitt-st. (factory), f., y.r. 40*l.* 660

2, Greyfriars, f., y.r. 13*l.* 188

March 1.—By DEBENHAM, TEWSON, & Co.

Hammersmith.—292 to 306 (even), King-st. (s.), area 27,000 ft., f., y.r. 471*l.* 10s. 10,000

66 and 67, Brook-green, area 0 a. 2 r. 19 p., f., y.r. 120*l.* 3,150

Holloway.—11, Hilldrop-cres., u.t. 44½ yrs., g.r. 8*l.*, y.r. 60*l.* 500

Stamford Hill.—10 and 12, Daleview-rd., u.t. 55 yrs., g.r. 11*l.*, y.r. 60*l.* 555

Palmer's Green.—1, 2, 3, and 4, Barrowell-green-villas, f., e.r. 175*l.* 1,620

By J. & W. JOHNSON & Co.

Clapton.—188, Lower Clapton-rd., u.t. 79 yrs., g.r. 7*l.* 10s., e.r. 60*l.* 660

By E. SIMPSON.

Lewisham.—23, Sandrock-rd., u.t. 82 yrs., g.r. 6*l.* 6s., e.r. 36*l.* 400

March 2.—By T. W. CATTELL & Co.

Richmond.—Lion-gate-gdns., i.g.r. 68*l.* 5s., u.t. 78½ yrs., g.r. 4*l.* 1,305

Kilburn.—54, Priory-pk.-rd., f., e.r. 40*l.* 605

By H. DONALDSON & SON.

Dalston.—52, Parkholme-rd., u.t. 32 yrs., g.r. 2*l.* 10s., y.r. 32*l.* 290

23, Lavender-gr., u.t. 39 yrs., g.r. 4*l.*, e.r. 36*l.* 330

By MARK GILBERT.

Enfield Wash.—Alma-rd., etc., f.g.r. 225*l.*, reversion in 50 yrs. 5,025

Inkerman-ter., f.g.r. 13*l.* 2s. 6d., reversion in 50 yrs. 309

Alma-rd., f.g.r. 42*l.* 2s., reversion in 50 yrs. 1,031

By FRANK JOLLY & Co.

Hackney.—110, King Edward-rd., u.t. 35½ yrs., g.r. 7*l.* 10s., y.r. 45*l.* 340

Clapton.—43, Upper Clapton-rd., u.t. 58 yrs., g.r. 10*l.*, p. 760

47, Downs-rd., f., p. 1,550

Leyton.—131, Capworth-st., u.t. 69½ yrs., g.r. 5*l.*, w.r. 26*l.* 160

Stepney.—13, Perriwinkle-st., c., w.r. 22*l.* 2s. 190

By FOSTERS' (at 54, Pall Mall).

Barnes.—40, Castelnau, u.t. 77 yrs., g.r. 16*l.*, p. 1,100

March 3.—By BURLEY & BRACKENBURY.

Hackney Wick.—50, 52, and 54, White Post-la., u.t. 56 yrs., g.r. 8*l.*, w.r. 81*l.* 18s. 505

By NEWBON, EDWARDS, & SHEPHARD.

Islington.—25, Alfred-st., u.t. 22¼ yrs., g.r. 5*l.*, y.r. 36*l.* 250

Camden Town. — 205, Camden-rd., u.t. 34½ yrs., g.r. 12*l.*, e.r. 90*l.* 500

Barnsbury.—86, Hemingford-rd., u.t. 36 yrs., g.r. 7*l.*, y.r. 38*l.* 310

Harringay.—22, Wightman-rd. (s.), u.t. 83½ yrs., g.r. 12*l.*, y.r. 80*l.* 1,030

Clapton.—74, Nightingale-rd., f., y.r. 50*l.* 830

By J. ODELL & Co.

Brixton.—153 and 155, Acre-la., u.t. 27½ yrs., g.r. 10*l.*, y.r. 82*l.* 685

Dalston.—8, Mayfield-rd., u.t. 54 yrs., g.r. 7*l.* 10s., y.r. 39*l.* 365

Barton Mills, Suffolk.—Main-st., freehold cottage, area half an acre, y.r. 8*l.* 108

By HARDS & BRADLY.

Southwark.—1 & 8, Bath-ter., f., y.r. 101*l.* 8s. 1,095

Peckham.—8 & 10, Nutbrook-st., u.t. 71 yrs., g.r. 10*l.*, w.r. 70*l.* 4s. 585

Dulwich.—95 to 101 (odd), St. Dunstan's-rd., u.t. 86¼ yrs., g.r. 12*l.*, w.r. 88*l.* 8s. 710

Blackheath.—56, Humber-rd., u.t. 91¼ yrs., g.r. 6*l.* 6s., e.r. 40*l.* 450

By STIMSON & SONS.

Rotherhithe.—48 and 50, Cathay-st., also "Amhurst Cottage," f., w.r. 65*l.* 520

Dulwich.—239, Upland-rd., and stabling, f., e.r. 60*l.* 880

Brixton.—55, Nursery-rd., u.t. 70¼ yrs., g.r. 6*l.*, y.r. 30*l.* 285

Camberwell.—144, Coldharbour-la., u.t. 60¾ yrs., g.r. 7*l.*, e.r. 50*l.* 450

68, 70, and 70a, Wells-st. (s.), u.t. 23 yrs., g.r. 36*l.*, y.r. 78*l.* 350

Walworth.—45 and 47, Morecambe-st., f., y.r. 42*l.* 2s. 525

15 to 30, Thornton-st., u.t. 9½ yrs., g.r. 40*l.*, w.r. 416*l.* 800

Old Kent-rd.—43, Ormside-st., u.t. 7 yrs., g.r. 5*l.* 4s., y.r. 60*l.* 100

102, Ormside-st. (s.), u.t. 65 yrs., g.r. 4*l.*, w.r. 26*l.* 180

New Cross.—4, Kender-gr., u.t. 20¾ yrs., g.r. 4*l.*, w.r. 32*l.* 10s. 150

By C. C. & T. MOORE.

Holloway.—99, 101, and 103, Marlborough-rd., u.t. 63¼ yrs., g.r. 18*l.* 18s., y.r. 96*l.* 8s. .. 925

Willesden.—87, Mayo-rd., u.t. 70 yrs., g.r. 5*l.*, w.r. 26*l.* 145

Shepherd's Bush.—17 to 25 (odd), Tunis-rd., u.t. 76 yrs., g.r. 27*l.* 10s., y.r. 141*l.* 925

Battersea.—123, Speke-rd., u.t. 60¼ yrs., g.r. 5*l.* 10s., w.r. 27*l.* 6s. 195

Southend, Essex.—13 to 18, Elizabeth-rd., u.t. 77½ yrs., g.r. 12*l.*, w.r. 124*l.* 16s. ..... 3.30 p.m. Ordinary Council Meeting. 4 p.m. Special Council Meeting. 4.30 p.m.

Leyton.—11 to 19 (odd), Grove Green-rd., u.t. 73 yrs., g.r. 24*l.* 10s., y.r. 125*l.* 790

Stepney.—80, 82, 84, 86, and 86½, Whitehorse-st. (s.), with yard and stabling, y.r. 132*l.*, also i.g.r. 16*l.*, u.t. 6¼ yrs., g.r. 32*l.* 10s... 320

Mile-end.—39, 41, and 92, St. Ann's-rd. (factory premises, etc.), u.t. 51¼ yrs., g.r. nil, y.r. 102*l.* £950

Bow.—6, Wellington-rd., u.t. 19½ yrs., g.r. 11*l.*, y.r. 50*l.* 250

Mile-end.—5 to 10, Braintridge-st., u.t. 32 yrs., g.r. 25*l.* 4s., w.r. 162*l.* 10s. 960

1 and 2, Cordova-rd., u.t. 44 yrs., g.r. 8*l.*, w.r. 57*l.* 4s. 400

1 to 13, Louisa-st.; 1 to 4, Beaumont-st., and King's Arms' Yard, u.t. 10½ yrs., g.r., etc., 55*l.*, y.r. 627*l.* 6s. 1,520

14 to 24, Louisa-st., u.t. 31 yrs., g.r. 20*l.*, w.r. 343*l.* 4s. 2,570

281 to 289 (odd), Mile End-rd. (s.), u.t. 38½ yrs., g.r. 9*l.*, y.r. 260*l.* 2,730

Whitechapel.—75 & 77, Old Montague-st.; 1, 1a (the "Three Crowns" p.h.); 3 to 25, Dunk-st.; 50 to 58 (even), Chicksand-st.; and 34 to 48 (even), Great Garden-st., u.t. 15½ yrs., g.r. 230*l.*, y.r. 919*l.* 12s. 3,750

By E. J. CARTER.

Tunbridge Wells, Kent.—19, Broadwater-down, area 1½ acres, u.t. 55 yrs., g.r. 28*l.*, p. .. 1,600

By A. PREECE & SON (at Beckenham).

Beckenham.—55 to 65 (odd), Birkbeck-rd., f., y.r. 168*l.* 2,380

By H. W. SMITH (at Ilford).

Ilford, Essex.—Colenso-rd., seven plots of building land, f. 406

Durban-rd., two plots of building land, f. .. 112

March 4.—By WM. CLARKSON.

Forest Gate.—169, Romford-rd., f., e.r. 75*l.* .. 950

By PERCIVAL HODSON.

Camden Town.—32 and 34, Torriano-av., y.r. 84*l.*, also i.g.r. 55*l.* 17s., u.t. 40 yrs., g.r. 2*l.* 15s. 1,660

Holloway.—360, Camden-rd., u.t. 38½ yrs., g.r. 12*l.* 10s., y.r. 65*l.* 540

Hampstead-rd.—25, Edward-st., u.t. 17½ yrs., g.r. 9*l.*, y.r. 50*l.* 310

24, Robert-st., u.t. 17½ yrs., g.r. 1*l.* 10s. y.r. 52*l.* 10s. 475

35, Robert-st., u.t. 17½ yrs., g.r. 18*l.*, y.r. 48*l.* 255

Palmer's Green.—Palmerston-cres., a block of freehold building land 405

Tottenham.—59, Vicarage-rd., f., w.r. 31*l.* 4s. 275

By HY. HOLMES & Co.

Marylebone.—17, Paradise-st., u.t. 48 yrs., g.r. 9*l.*, w.r. 102*l.* 14s. 585

2, 3, 4, and 5, Wesley-st., u.t. 19 yrs., g.r. 10*l.*, y.r. 202*l.* 14s. 1,100

By OGDEN, SONS, & OLLEY.

Wimbledon.—Home-pk.-rd., four plots of building land, f. 450

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

FRIDAY, MARCH 11.

Institution of Civil Engineers (Students' Meeting).—Mr. W. G. Banister on "The Premium System of Payment for Labour." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Professor R. Elsey Smith on "Sanitary Building Construction and Planning; Soil and Local Physical Conditions." 7 p.m.

Junior Institution of Engineers.—Visit to the Works of the Electrical Power Storage Company, Millwall. 3 p.m.

Glasgow Architectural Craftsmen's Society.—Mr. J. I. Little on "Sewage Disposal of Country Houses." 8 p.m

SATURDAY, MARCH 12.

Royal Institution.—Right Hon. Lord Rayleigh on "The Life of Stokes," IV. 3 p.m.

Incorporated British Institute of Certified Carpenters. Visit to Victoria and Albert Museum, South Kensington. 3 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage and Destructor Works, Ealing. 2.15 p.m.

Edinburgh Architectural Association.—Visit to the Midlothian County Buildings, George IV. Bridge.

MONDAY, MARCH 14.

Royal Institute of British Architects.—Mr. J. D. Crace on "Plaster Decoration," with Lantern Illustrations. 8 p.m.

Society of Arts (Cantor Lecture). — Mr. Bertram Blount, F.I.C., on "Recent Advances in Electro-Chemistry," II. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Professor R. Elsey Smith on "Ventilation, Warming and Lighting." 7 p.m.

Regent-street Polytechnic (University Extension Lectures).—Professor Vivian Lewes on "The Chemistry of Air, Fire, and Water," VII. 8 p.m.

Bristol Society of Architects.—Mr. C. Daubney on "Fire Risk." 8 p.m.

TUESDAY, MARCH 15.

Institution of Civil Engineers.—(1) Mr. G. H. Stephens, C.M.G., M.Inst.C.E. on "The Barrage Across the Nile at Asyut." (2) Sir Robert Hanbury Brown, K.C.M.G., on "The Use of Cement Grout at the Delta Barrage in Egypt." 8 p.m.

Institute of Builders.—Finance Committee Meeting. 3.30 p.m. Ordinary Council Meeting. 4 p.m. Special Council Meeting. 4.30 p.m.

Society of Arts (Applied Art Section).—Mr. A. S. Cole, C.B., on "Recent Developments in Devonshire Lace Making." 4.30 p.m.

Dundee Institute of Architecture.—Mr. P. H. Thoms on "Some Characteristic Features of Scottish Architecture." 8 p.m.

WEDNESDAY, MARCH 16.

Architectural Association (Discussion Section).—Paper by Mr. P. L. Waterhouse, M.A., on "The Advantages and Disadvantages of Practice in the Colonies." 7.30 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting of Members. 8 p.m.

Society of Arts.—Mr. L. P. Ford on "Artificial and other Building Stones." 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—(1) Inspection at the East London Water Works, Lea Bridge, Clapton. 3 p.m. (2) Mr. W. C. Tyndale on "Sanitary Appliances." 7 p.m.

Edinburgh Architectural Association (Associates' Paper).—Mr. A. Ingleby Wood on "Pewter." 8 p.m.

Institution of Civil Engineers.—Students' visit to the Pianoforte Works of Messrs. John Broadwood & Sons, Limited, Stour Road, Old Ford, E. 2.30 p.m.

British Archæological Association.—(1) Mr. Andrew Oliver on "Whitehall and the Thames," with Maps and Views. (2) A short Paper by Mr. Chas. Lynham, F.S.A. 8 p.m.

Institute of Builders. — Annual General Meeting. 3 p.m.

THURSDAY, MARCH 17.

Carpenters' Hall, London Wall (Free Lectures on Matters Connected with Building).—Professor R. Elsey Smith will read a paper on "Canterbury Cathedral," prepared by the late Professor T. Roger Smith. 8 p.m.

London Master Builders' Association.—Finance Committee Meeting. 3.15 p.m. Council Meeting. 4 p.m.

FRIDAY, MARCH 18.

Institution of Mechanical Engineers.—M. Edouard Sauvage on "Compound Locomotives in France." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. W. C. Tyndale on "House Drainage." 7 p.m.

SATURDAY, MARCH 19.

Architectural Association.—Fifth spring visit, to the Belgrave Hospital for Children, Clapham-road, by permission of Mr. H. P. Adams.

Royal Institution.—The Right Hon. Lord Rayleigh on "The Life of Stokes." V. 3 p.m.

London Association of Correctors of the Press.—Jubilee Dinner, Grand Hall, Hotel Cecil, Right Hon. Viscount Goschen, P.C., in the chair. 6.30 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Morden Hall Dairy Farm, Morden, Surrey. 3 p.m.

The Junior Institution of Engineers.—Conversazione at the Westminster Palace Hotel. 7 p.m.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances (payable to J. MORGAN), should be addressed to the Publisher of "THE BUILDER," Catherine-street, W.C.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and Quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 16 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 13 0	" " "
Facing Stocks	2 12 0	" " "
Shippers	2 10 0	" " "
Flettons	1 10 0	" at railway depôt.
Red Wire Cuts	1 13 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	4 4 0	" " "
Do. Bullnose	4 10 0	" " "
Best Stourbridge Fire Bricks	4 8 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	13 0 0	" " "
Headers	12 0 0	" " "
Quoins, Bullnose, and Flats	17 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamferred, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamferred, Squints	14 0 0	" " "
Second Quality, White and Dipped Salt Glazed	2 0 0	" less than best.

BRICKS, &c.—(*continued*)—

	s. d.	
Thames and Pit Sand	7 3	per yard, delivered.
Thames Ballast	6 0	" "
Best Portland Cement	30 0	per ton, "
Best Ground Blue Lias Lime	21 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8¼	" "
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancester in blocks	1 11	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 5	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	per ft. cube, deld. rly. depôt.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per foot super. "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7¼	" "
1½ in. to 2 in. ditto, ditto	0 6	" "
HARD YORK—		
Scappled random blocks	3 0	per ft. cube "
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides Ditto	3 0	" "
3 in. sawn two sides (slabs random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube. deld. rly. depôt
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt
" " " 3 in. do.	1 2½	" "

SLATES.

in. in.	£ s. d.	
20 × 10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20 × 12 " "	13 17 6	" "
20 × 10 best seconds "	12 15 0	" "
20 × 12 " " "	13 10 0	" "
16 × 8 " " "	7 0 0	" "
20 × 10 best blue Portmadoc	12 12 6	" "
16 × 8 best blue Portmadoc	6 12 6	" "
20 × 10 best Eureka unfading green	15 2 6	" "
20 × 12 " "	17 2 6	" "
18 × 10 " "	12 10 0	" "
16 × 8 " "	10 5 0	" "
20 × 10 permanent green	11 10 0	" "
18 × 10 " "	9 10 0	" "
16 × 8 " "	6 10 0	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depôt.
Hip and Valley tiles	3 7	per doz. " "
Best Brosely tiles	50 0	per 1000 " "
Do. Ornamental tiles	52 6	" " "
Hip and Valley tiles	4 0	per doz. " "
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 " "
Do. Ornamental do	60 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 0	" " "
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 " "
Do. Ornamental do	54 6	" " "
Hip tiles	4 1	per doz. " "
Valley tiles	3 8	" " "
Best "Rosemary" brand plain tiles	48 0	per 1000 " "
Best Ornamental tiles	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 8	" " "
Best "Hartshill" brand plain tiles, sand faced	50 0	per 1000 " "
Do. pressed	47 6	" " "
Do. Ornamental do	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 6	" " "

WOOD.

	At per standard. £ s. d.	£ s. d.	
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	15 10 0	16 10 0	
Deals: best 3 by 4	14 10 0	15 10 0	
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0	12 10 0	
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.	
Deals: seconds	1 0 0	less than best	
Battens: seconds	0 10 0	" " "	
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	9 10 0	
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	9 10 0	
Foreign Sawn Boards—1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.	
¾ in.	1 0 0	"	

WOOD—(*continued*)—

	At per load of 50 ft.	
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 15 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0

JOINERS' WOOD.

White Sea:	At per standard.	
first yellow deals, 3 in. by 11 in.	23 0 0	24 0 0
3 in. by 9 in.	21 0 0	22 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.	18 0 0	19 10 0
Battens	13 10 0	15 0 0
Petersburg: second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 10 0	14 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	9 10 0	10 10 0
Pitch-pine: deals	16 10 0	20 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	35 0 0	upwards.
Oddments	24 0 0	26 0 0
Seconds, regular sizes	26 10 0	28 10 0
Yellow Pine oddments	22 0 0	24 0 0
Kauri Pine—Planks, per ft. cube	0 3 6	0 5 0
Danzig and Stettin Oak Logs—Large, per ft. cube	0 2 6	0 3 6
Small " "	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube.	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8
¾ in. do. do.	0 0 6½	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	21 0 0
American Whitewood Planks—per ft. cube	0 4 0	—

Prepared Flooring—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
¾ in. by 7 in. do. do. do.	0 14 0	0 18 0
1 in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	...	7 5 0
Compound Girders, ordinary sections	8 2 6	...	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6	...	8 17 6
Flitch Plates	8 5 0	...	8 15 0
Cast Iron Columns and Stanchions including ordinary patterns	7 2 6	...	8 5 6

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON—			
Common Bars	7 5 0	...	7 15 0
Staffordshire Crown Bars, good merchant quality	7 15 0	...	8 5 0
Staffordshire "Marked Bars"	10 0 0	...	—
Mild Steel Bars	8 15 0	...	9 5 0
Hoop Iron, basis price	9 5 0	...	9 10 0
" " Galvanized	17 10 0	...	—
("And upwards, according to size and gauge.)			
Sheet Iron (Black)—			
Ordinary sizes to 20 g.	9 15 0	...	—
" " 24 g.	10 15 0	...	—
" " 26 g.	12 5 0	...	—
Sheet Iron, Galvanised, flat, ordinary quality—			
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12 15 0	...	—
Ordinary sizes to 22 g. and 24 g.	13 5 0	...	—
" " 26 g.	14 5 0	...	—
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	16 0 0	...	—
" " 22 g. and 24 g.	16 10 0	...	—
" " 26 g.	18 0 0	...	—
Galvanised Corrugated Sheets—			
Ordinary sizes 6 ft. to 8 ft. 20 g.	12 10 0	...	—
" " 22 g. and 24 g.	13 0 0	...	—
" " 26 g.	13 15 0	...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 15 0	...	—
Best Soft Steel Sheets, 22 g. & 24 g.	12 15 0	...	—
" " " 26 g.	14 0 0	...	—
Cut nails, 3 in. to 6 in.	9 0 0	...	9 10 0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Per ton, in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 3lb. and up	14 10 0	...	—
Pipe in coils	15 0 0	...	—
Soil pipe	17 10 0	...	—
Compo pipe	17 10 0	...	—
ZINC—Sheet—			
Vieille Montagne ....ton	26 5 0	...	—
Silesian	26 0 0	...	—
COPPER—			
Strong Sheet....per lb.	0 0 10½	...	—
Thin ,, ... ,,	0 0 11½	...	—
Copper nails .... ,,	0 0 11	...	—
BRASS—			
Strong Sheet....per lb.	0 0 10	...	—
Thin ,, ... ,,	0 0 11	...	—
TIN—English Ingots .... ,,	0 1 4	...	—
SOLDER—Plumbers' .... ,,	0 0 6½	...	—
Tinmen's .... ,,	0 0 8	...	—
Blowpipe .... ,,	0 0 9	...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2d. per ft. delivered.
,, fourths	1½d. ,, ,,
21 oz. thirds	3d. ,, ,,
,, fourths	2½d. ,, ,,
26 oz. thirds	3½d. ,, ,,
,, fourths	3d. ,, ,,
32 oz. thirds	4½d. ,, ,,
,, fourths	4d. ,, ,,
Fluted Sheet, 15 oz.	2½d. ,, ,,
,, 21 oz.	3½d. ,, ,,
⅛ Hartley's Rolled Plate	1⅝d. ,, ,,
3/16 ,, ,, ,,	1⅞d. ,, ,,
¼ ,, ,, ,,	2⅛d. ,, ,,

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes or barrels	per gallon	0 1 7
,, ,, ,, in drums	,,	0 1 10
Boiled ,, ,, in pipes or barrels	,,	0 1 10
,, ,, ,, in drums	,,	0 2 1
Turpentine, in barrels	,,	0 3 9
,, in drums	,,	0 3 11
Genuine Ground English White Lead	per ton	19 0 0
Red Lead, Dry	,,	19 0 0
Best Linseed Oil Putty	per cwt.	0 7 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TO CORRESPONDENTS.

C. & W.—T. G.—B. H. & Co. (Amounts should have been stated).—T. H. (Below our limit).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

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Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

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We are compelled to decline pointing out books and giving addresses.

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER and *not* to the Editor.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABERGAVENNY.—For alterations, additions, and repairs to school building in Castle-street and Hereford-road, for the School Board. Mr. E. A. Johnson, Architect to the Board :—

J. Charles	£2,822	J. G. Thomas	£2,326
S. Foster	2,345	E. C. Jordan	2,276

BANGOR.—For about 448 lineal yards of pipe-sewer in Seacliffe-road, for the Urban District Council. Mr. E. L. Woods, C.E., Town Surveyor, Bangor :—

Warkman, Ltd.	£802 0	Hugh Wheelly	£577 0
Jas. Ross & Sons	759 0	Robert Caulfield, Bangor*	499 17
Robert Legge	715 0		
Wm. Legge	645 0		

BOWERHAM (Lancaster).—For the erection of a shop and dwelling-house at Bowerham, for Mr. E. Williams. Mr. J. Parkinson, architect, 67, Church-street, Lancaster. Quantities by architect :—

Masonry and Joinery: R. Thompson, Lancaster	£475 0 0
Slating and Plastering: R. Hall & Son, Lancaster	69 0 0
Plumbing: J. A. Goad, Lancaster	70 0 0
Painting: T. Holden, Lancaster	20 19 9

CALDBECK.—For 2 in. cast-iron main, valve, road boxes, etc., for Wigton Rural District Council. Mr. W. Brown, Surveyor, Kildare, Wigton. Quantities by Surveyor :—

Milward & Co., Carlisle*	£187

CARLISLE.—For the erection of two houses and shops in London-road, for Mr. J. Tiffen. Mr. H. H. Hodgkinson, architect, 9, Lowther-street, Carlisle :—

Builder: G. Hill & Son, South Henry-square	Total,
Joiner: J. Hendson, Finkle-street	
Plaster: D. Johnson, East Norfolk-street	£803 5 6
Plumber: W. J. Wilson, Lowther-street	
Painter: R. S. Kirk, Henry-street	
Slater: Wm. Nanson, Lowther-street	

[All of Carlisle.]

DEVONPORT.—For the erection of an entrance lodge and other buildings at the new Cemetery, North Prospect, for the Devonport Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, Devonport :—

Ambrose	£1,793 18 0	A. N. Coles	£1,599 0 0
Jenkin & Son	1,771 0 0	F. J. Stanbury, Devonport*	1,572 2 0
Partridge	1,656 0 0		
S. Roberts	1,655 1 9		

DEVONPORT.—For levelling, paving, and completing Florence-street, Barton-avenue, Trelawney-avenue, etc., for the Town Council. Mr. J. F. Burns, Borough Surveyor, Muncipal Offices, Devonport :—

Florence-street: E. Duke, Plymouth*	£239 5 1
Lane between Welsford and Balmoral-avenues: T. Domy, Plymouth*	315 17 6
Barton-avenue (Section 2): T. J. Stanbury, Devonport*	119 8 1
Trelawny-avenue: Jefford & Sons, Devonport*	306 3 7
Lane between Pasley-street and St. George's-terrace: E. Duke, Plymouth*	499 7 9

DROYLSDEN.—For street works, Medlock and Hart streets, for the Urban District Council. Mr. C. Hall, Surveyor to the Council, 10, Ashton-road, Droylsden :—

Bates & Co.	Medlock-st. £2,316 0 0		£2,881 0 0
	Hart-st. 565 0 0		
W. H. Hurst	Medlock-st. 2,166 0 0		2,704 0 0
	Hart-st. 538 0 0		
F. Mitchell & Sons	Medlock-st. 2,118 19 3		2,644 6 2
	Hart-st. 525 6 11		
Worthington	Medlock-st. 1,876 10 10		2,349 17 8
	Hart-st. 473 6 10		
J. Culshaw	Medlock-st. 1,830 18 9		2,313 16 2
	Hart-st. 482 17 5		
Gosling & Stafford, Hazelgrove, Manchester*	Medlock-st. 1,815 2 0		2,279 10 2
	Hart-st. 464 8 2		
Surveyor's estimate	Medlock-st. 2,048 0 0		2,571 0 0
	Hart-st. 523 0 0		

ETON (Bucks).—For new fire brigade station, High-street, Eton, for the Urban District Council. Mr. C. W. Baker, architect, 24, Heythorpe-street, Wandsworth, S.W. Quantities by Mr. J. Simmonds, Surveyor to the Council :—

G. Geay	£2,725 0	Butcher & Hendry	£2,570 0
Hollis & Sons	2,698 0	H. Burfoot	2,443 10
T. J. Messom & Sons	2,691 0	W. Watson, Ascot‡	2,369 0
H. D. Bowyer	2,685 0	G. H. Gibson	2,348 0
Thompson & Beveridge	2,669 0	W. Green & Sons	2,325 0
J. Fergusson & Co.	2,598 0	E. Chamberlain	2,320 0
		H. Flint	2,269 0

‡ Accepted subject to sanction to loan by Local Government Board.

HANWELL.—For sewering, levelling, paving, etc., Rosebank-road (lower portion), and footpaths, for the Urban District Council. Mr. S. W. Barnes, A.M.Inst.C.E., Council Offices, Hanwell, W. :—

B. Nowell & Co.	£932 13 3	T. Watson, jun.	£818 1 4
H. Morecroft	898 0 0	W. Neaves & Son	799 1 6
J. Macklin	879 8 9	R. Ballard, Ltd.	797 0 0
London & County Builders, Ltd.	875 9 0½	Harvey Bros., V'toria-st. S.W.*	788 12 8
F. Fowles	834 0 0		

HASTINGS.—For laying about 686 ft. of 6 in. pipe sewer in Old Roar-road, Silverhill, for the Corporation. Mr. P. H. Palmer, Borough Engineer, Town Hall, Hastings :—

Joseph Harvey, 53, King's-road, St. Leonard's	£120

HIPPERHOLME.—For supply of about 139 tons of cast-iron water pipes for the Urban District Council. Mr. G. W. Thompson, Surveyor, Council Offices, Hipperholme :—

L. Cooper	£813 0 0	J. & R. Ritchie	£661 5 0
J. Oakes & Co.	709 15 0	Staveley Iron Co., Ltd.	657 5 0
Stanton Ironworks Co., Cochrane & Co., Ltd.	680 12 6	E. & W. H. Haley, Bradford*	656 12 6
	670 12 6	Sheepbridge Iron Co.	652 11 3
Clay Cross Co.	667 3 4		
J. Blakeborough	665 0 0		

HULL.—For the erection of the Carnegie Public Library, West Park, Anlaby-road, for the Corporation Mr. J. H. Hirst, City Architect, Town Hall, Hull :—

Evans & Barton	£2,798 18 8	E. Good & Son	£2,495 18 7
J. H. Fenwick	2,660 0 0	H. Kaye	2,415 0 0
Simpson & Son	2,595 2 0	J. R. Woods	2,410 17 0
T. Bulby	2,585 0 0	F. Singleton	2,390 0 0
J. Carr	2,521 17 5	F. Southern	2,355 4 6
T. Coates	2,500 0 0	H. T. Arnott*	2,333 2 6

[All of Hull.]

HUTTON (Essex).—For the erection of children's homes, schools, etc., for the Guardians of Poplar Union. Messrs Holman & Goodrham, architects, 6, King's Bench-walk, Temple, E.C. Quantities by Messrs. J. Rider Hunt & Co., 181, Queen Victoria-street :—

		Including Additional Glazed Bricks, etc.
Harris & Wardrop	£188,676	£193,254
S. J. Scott	188,567	194,004
Perry & Co.	182,435	186,887
Leslie & Co., Ltd.	177,009	181,775
J. S. Hammond & Son	176,880	181,334
F. & T. Thorne	174,861	179,140
G. Parker	174,659	179,700
J. Smith & Son	170,997	174,965
F. G. Minter	169,482	175,730
Pattinson & Son	168,864	173,193
C. Miskin & Son	167,432	171,772
C. Wall, Ltd.	165,040	168,687
Holliday & Greenwood	163,329	167,448
Kirk & Randall	162,830	167,486
McCormick & Sons*	161,828	165,820
F. & E. Davey, Ltd.	157,475	161,427

LANCASTER.—For additions to vagrants' ward and boiler-house, etc., at the workhouse. Mr. J. Parkinson, architect, 67, Church-street, Lancaster. Quantities by architect :—

Masonry: T. Mawson & Son, Lancaster	£649 10 9
Joinery: Peill & Riley, Lancaster	190 6 0
Slating and Plastering: H. J. Till, Lancaster	144 0 0
Plumbing: Harrison & Moser, Lancaster	80 18 4
Painting: E. C. Sarr, Lancaster	21 15 0
Heating: A. Seward & Co., Lancaster	26 10 0
Steam Boiler: J. Foster & Sons, Preston	273 0 0
Disinfector: Goddard, Massey, & Warner, Nottingham	260 0 0

LANCHESTER.—For sewerage-disposal works and footbridge at Langley Park, for the Rural District Council. Mr. J. R. Lupton, Surveyor, Lanchester. Quantities by Surveyor :—

Smart Walker, Cockfield, Bishop Auckland, co. Durham*	£1,695

LONDON.—For additional buildings at South-grove Workhouse, Mile End, for the Guardians of Whitechapel Union. Mr. A. Conder, architect, 9, Bridge-street, Westminster, S.W. :—

Wm. Hooper	£4,200 0 0	M. Calnan & Son	£3,456 0 0
Watts, Johnson, & Co.	3,997 0 0	C. Yates & Co.	3,443 0 0
A. E. Symes	2,365 0 0	Todd & Newman	3,433 0 0
R. A. Dean & Co.	3,804 0 0	Jno. Greenwood, Ltd.	3,425 0 0
Johnson & Co.	3,751 0 0	Albert Monk	3,419 0 0
Leslie & Co., Ltd.	3,627 0 0	Hy. Knight & Son	3,400 0 0
Ferry Building Co.	3,620 0 0	J. Chessum & Son	3,395 0 0
Wm. Reason	3,597 0 0	H. Kent	3,388 0 0
B. E. Nightingale	3,559 0 0	W. Lawrence & Son	3,384 0 0
J. Grover & Son	3,540 0 0	J. Appleby & Sons	3,372 0 0
F. & T. Thorne	3,496 0 0	Forster Bros.	3,349 0 0
J. Ferguson & Co.	3,495 0 0	Chas. North	3,320 0 0
E. Good & Son, Ltd.	3,491 10 2	W. Akers & Co.	3,252 0 0
Johnson Bros.	3,491 0 0	H. Young	3,243 0 0
Harris & Wardrop	3,479 0 0	R. & E. Evans	3,149 0 0

LONDON.—For reconstruction of the South-Eastern Hospital, Avonley-road, New Cross-road, S.E., for the Metropolitan Asylums Board. Messrs. T. W. Aldwinckle & Son, architects, 20, Denman-street, London Bridge, S.E. Quantities by Messrs. W. H. Barber & Son, 22, Buckingham-street, Adelphi, W.C. :—

G. E. Wallis & Sons	£128,293	Charles Wall, Ltd.	£117,044
A. N. Coles	126,944	Walter Lawrence & Son	116,573
Chas. Dearing & Son	123,590	F. G. Minter	116,500
A. J. Bateman	121,977	Henry Martin	116,200
Foster & Dicksee	121,900	Kirk & Randall	112,970
Leslie & Co., Ltd.	120,449	G. Godson & Sons, Pembroke Works, Kilburn-lane, W.*	109,699
B. E. Nightingale	118,250		
W. Johnson & Co., Ltd.	117,406		

LOWESTOFT.—For new free library, for the Corporation. Mr. G. W. Leighton, architect, 6, Princes-street, Ipswich :—

Grimwood & Sons	£6,593	Youngs & Sons	£6,219
Earle	6,527	Beckett	6,097
Cole	6,492	Bedwell & Parker	6,090
Elsey	6,425	Hawes & Sons, Norwich*	6,000
Linzell	6,397		

[Accepted subject to reduction.]

NEATH.—For new roofs, etc., and alterations to the general market. Mr. D. M. Jenkins, A.M.Inst.C.E., Borough Engineer, Gwyn Hall, Neath :—

Contract No. 1. (*Builder's Work, etc.*)

Lloyd Bros.	£3,418	J. Snow	£2,755
Knox & Wells	3,015	Goodridge & Son, Neath*	2,547
Jones, Price, Rees, & Davies	2,934	W. H. Creighton	2,417
Bennett Bros.	2,923	C. & F. Gaen	2,396
E. Thomas	2,867		

TENDERS—*Continued on page* 299

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be delivered
*Council Schools	Twickenham U.D.C.	Not stated	No date
*New Public Library, Calne, Wilts.	The Committee	Not stated	April 9

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
Steel Condensor Platform at Smithfield Market	Manchester Corporation	City Architect, Town Hall, Manchester	Mar. 11
Additions, etc., to Sessions House, Lincoln	.....	W. Mortimer & Son, Architects, Lincoln	do.
Road Material and Repairs	Riccall R.D.C.	E. Townsend, Clerk, 1, Abbey-place, Selby	Mar. 12
Painting at Offices, Depot, and Pumping Stations	Hull Corporation	F. J. Bancroft, Water and Gas Engineer, Alfred Gelder-st., Hull	do.
Five Coal Wagons	Pontypridd U.D.C.	E. Jones, Gasworks, Treforest	Mar. 14
Dry Gas-meters	Leeds Corporation	R. H. Townsley, Gas Offices, East-parade, Leeds	do.
Supplies, Electricity Department	Norwich Corporation	City Electrical Engineer, Norwich	do.
Paper Insulated Cables (Twelve Months' Supply)	Electricity Com., Warrington Corp.	F. V. L. Mathias, Borough Electrical Eng., Howley, Warrington	do.
Electric Motors (Twelve Months' Supply)	do.	do.	do.
Engineering Workshop, etc., at Municipal Tec. Schs.	Brighton Education Committee	Borough Engineer and Surveyor, Town Hall, Brighton	do.
Central Hall, Hartington-street, Barrow-in-Furness	.....	J. F. Curwen, F.R.I.B.A., 26, High-gate, Kendal	do.
Eight Hydraulic (Wagon) Lifting Rams	Dundee Gas Commissioners	A. Yuill, Gas Engineer, Gasworks, Dundee	do.
Carburetted Water Gas Plant at Gasworks	do.	do.	do.
Ear'nware Pipe Sew. & Sur. Wat. Drs. in Arbury-rd.	Nuneaton & Chilvers Coton U.D.C.	T. C. Cook, Engineer, Council Offices, Nuneaton	Mar. 15
Street Watering Posts	Waltham Holy Cross U.D.C.	W. T. Streather, Engineer to Council, Waltham Abbey	do.
Materials, etc.	Hampton U.D.C.	S. H. Chambers, Surveyor to Council, Public Offices, Hampton	do.
Materials and Repairs	Ipswich Sanitary Authority	E. Buckham, Borough Surveyor, Town Hall, Ipswich	do.
Repairs to Wall and other Works at Union Wk'house	Belfast Guardians	J. W. Robb, Clerk, Union Workhouse, Belfast	do.
Materials	Bucklow R.D.C.	J. Burgess, Tabley Superior, near Knutsford	do.
Runmerry Steading, Alves	.....	J. Beattie, Earlsmill, Forres	do.
Renewal Runmerry Cottage	.....	do.	do.
Double Cottage, Lochyhill, Forris	.....	do.	do.
Double Cottage, West Kerrogair, Petty	.....	do.	do.
Fifty 3Eng. Heart-oak Posts, at Melton Station, G.E.R.	Woodbridge R.D.C.	G. Cook, Surveyor, Grundisburgh, near Woodbridge	do.
400 Feet Gas Tubing	do.	do.	do.
Materials, Waterworks Department	Leeds Corporation	City Engineer's Waterworks Office, Municipal Buildings, Leeds	do.
Electric Light at Workhouse, Pleck-road	Walsall Guardians	A. H. Lewis, Clerk, 29, Leicester-street, Walsall	Mar. 16
Furn. Dining-hall & Kitchen at W'khouse, Knutsford	Bucklow Guardians	R. J. M'Beath, Architect, Birsiam House, Sale	do.
Urinal, near Drill Shed	Warrington Sanitary Committee	T. Longdin, Borough Surveyor, Warrington	do.
Pipes, Castings, Tubes, and Fittings, etc.	Halifax Gasworks Committee	J. Wilkinson, Engineer, Gasworks, Halifax	do.
Shedding and Hoarding for Showyards	Herefordshire, etc., Agricultural Soc.	T. H. Edwards, Secretary, Corn Exchange Offices, Leominster	do.
Iron Engine Shed	Ross R.D.C.	G. F. Minett, Clerk, Church-street, Ross, Herefordshire	do.
Electric Wiring, Crown and Mitre Hotel, Carlisle	Walter Scott	S. W. Cuttriss, Engineer, Prudential-buildings, Park-row, Leeds	do.
Road Material	Cuckfield R.D.C.	A. Macarthur, Surveyor, Council Offices, Hayward's Heath	do.
Deck Bridges (40 ft. and 60 ft. spans)	East India Ry. Co.	C. W. Young, Nicholas-lane, London, E.C.	do.
Pub. Lib'y & R'ding R'ms, Rawmarsh Hill, Parkgate	Rawmarsh U.D.C.	J. Platts, Architect, High-street, Rotherham	do.
Two Semi-Detached Resi., Thornhill-rd., Edgerton	.....	J. Berry, Architect, 3, Market-place, Huddersfield	do.
*Making-up and Paving Roads	Fulham Borough Council	Borough Surveyor, Town Hall, Fulham, S.W.	do.
Improvement of Nicholson-street, Castleford	Castleford U.D.C.	W. Green, Surveyor to Council, Castleford	Mar. 17
Glazed Earthenware Pipes, etc., for Sewerage	Leeds Corporation	City Engineer's Office, Leeds	do.
Lime at Knostrop Sewage Works	do.	do.	do.
Castings required by Sewerage Committee	do.	do.	do.
Cement	do.	do.	do.
450 Lineal Yards of Iron Unclimbable Hurdles	Street Committee, Warrington	T. Longdin, Borough Surveyor, Warrington	do.
Alterations and Additions, Coggeshall	Heart-in-Hand Indus. Co-op. Society	J. W. Clark, Architect, Coggeshall	do.
Restoring Butt's Mill, Gomersal	.....	W. H. D. Horsfall, Architect, 6, Harrison-road, Halifax	do.
C.I. Girders, etc., Cov. Ser. Res'voir, Heath Waterw'ks.	Cardiff Corporation	C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff	do.
400 Tons of c.i. Socket Pipes	do.	do.	do.
Bowl House, West Meadows	Edinburgh Corporation	R. Morham, City Arch., Public Works Office, City-cham., Edinburgh	do.
*Extension of Platform Awning, Hawes Junction	Midland Railway	Company's Architect, Cavendish House, Derby	do.
*Cleaning and Painting Buildings, etc.	do.	do.	do.
Three Emer. Iron St'rcases, Union W'kh'se, Hillingdon	Uxbridge Guardians	W. L. Eves, A.R.I.B.A., 54, High-street, Uxbridge	do.
Materials, etc.	Greenwich Borough Council	Borough Engineer's Office, Town Hall, Greenwich-road., S.E.	Mar. 18
Street Works, Linden-road and Victoria Drive North	Bognor U.D.C.	Surveyor to the Council, Bognor	do.
Materials	Godstone R.D.C.	J. George Powell, Engineer to the Council, Godstone, Surrey	do.
Foundations of Bandstand at Woodhouse Ridge	Leeds Corporation	City Engineer's Office, Leeds	do.
Iron Superstructure for Bandstand at W'dhouse Ridge	do.	do.	do.
Electric Lighting, Gas, Heating, Ventilating	Hearts of Oak Benefit Society	Chairman of Bldg., Committee, 17, Charlotte-st., Fitzroy-sq., W.	do.
Bells and Telephones (New Offices, Euston-road)	do.	do.	do.
Lifts and Enclosures do.	do.	do.	do.
*Signal Station, etc., Alderney, Channel Islands	Admiralty	Director of Works Department, 21, Northumberland-avenue, W.C.	do.
*New Coastguard Buildings, Sea View	do.	do.	do.
Reservoir, Filter Beds, etc., Flemingsdown, n'r Bridgend	Bridgend Gas and Water Co.	T. Rees, M.Inst.C.E., Corn Exchange-chambers, Newport, Mon.	Mar. 19
Additions to Ardrumsee Church, Clones	Very Rev. L. J. Canon O'Neill	W. A. Scott, Architect, 72, Hollybank-road, Drumcondra, Dublin	do.
Materials for Repair of Highways and Footways	Pontefract R.D.C.	W. A. Glover, Clerk, Union Offices, Pontefract	do.
Footbridge, Clavering	Saffron Walden R.D.C.	H. Smith, Ashdon-road, Saffron Walden	do.
Retaining Walls, etc., Monton (Contract 1)	Eccles Corporation	T. S. Picton, C.E., Borough Surveyor, Town Hall, Eccles	do.
Retaining Walls and Folly Brook Culvert (Contract 2)	do.	do.	do.
Sewerage Works, Hargarth Ings, Tadcaster	Tadcaster R.D.C.	Martin & Fenwick, Engineers, 1, Park-place, Leeds	do.
Methodist Ch. at Laghey, Killyman, near Dungannon	Rev. H. Shire	Hobart & Heron, Architects, Dromore, co. Down	do.
Road Materials	Selby R.D.C.	E. Townsend, Clerk, 1, Abbey-place, Selby	do.
Creosote Oil	N.E. Ry. Co.	E. H. Clark, Stores Superintendent, Gateshead	do.
Materials	Highways & Sewage Com., Burnley	C. H. Pickles, Borough Surveyor, Town Hall, Burnley	do.
Road Material	Driffield R.D.C.	T. C. Beaumont, C.E., Surveyor, Driffield	do.
Materials and Cartage	Horsham R.D.C.	W. Dengate, Surveyor, 58, Park-street, Horsham	do.
Condensing Plant at New Power Station	Preston Corporation	W. H. Tittenson, Engineer, 25, Burrow-road, Preston	do.
Tar and Liquor Tanks, etc., Bradford-road Station	Manchester Corporation	C. Nickson, Gas Department, Town Hall, Manchester	do.
Painting Station Buildings	North-Eastern Railway	C. A. Harrison, Engineer, Central Station, Newcastle-on-Tyne	do.
459 Yards of 9-inch Pipe Sewer	Knaresborough U.D.C.	Surveyor's Office, Town Hall, Knaresborough	do.
463 Yards of Pipe Surface-water Drain	do.	do.	do.
Ironswood Hospital	Market Harborough U.D.C.	G. O. Nicholson, Manor House-buildings, Market Harborough	do.
14,000 yds. (sup.) of Creosote White Deal Pav. Blocks	Keighley Corporation	W. H. Hopkinson, Borough Engineer, Keighley	do.
Sewer, Sandwich	The Town Council	A. J. Firby, Borough Surveyor, Sandwich	do.
Flint and Granite	Southampton Corporation	J. A. Crowther, Boro' Engineer, Market-chambers, Southampton	Mar. 21
Sixteen Artisans' Dwellings, Mallow	Mallow U.D.C.	T. Wrixon, Clk., U.D.C. Offi., William O'Brien-st., Mallow, Ireland	do.
Four Shops, Bakery, and Stable at Senghenith	Senghenith Indus. Co-op. Soc., Ltd.	G. L. Watkins, Architect, Station-terrace, Caerphilly	do.
Making Two Lancashire Boilers, Beckett-st., W'kh'se	Leeds Guardians	T. Winn & Sons, Architect, 92, Albion-street, Leeds	do.
Road Materials	Maidstone U.D.C.	T. F. Bunting, Borough Surveyor, Fair Meadow, Maidstone	do.
Stores, Gas Department	Bury Corporation	H. Simmonds, Engineer, Gas Works, Bury, Lancs.	do.
Supplies	Newport Corporation	H. C. Bishop, Boro' Electrical Eng., Town Hall, Newport, Mon.	do.
Plant, Electricity Works	Lincoln Corporation	S. Clegg, City Elec. Eng., Elec. Wks., Brayfordside North, Lincoln	do.
Twenty Houses at Aberbeeg	Tir Graig Building Club	M. Gorman, Rosslea, Llanhilleth	do.
Granite	Blaby R.D.C.	G. E. Bouskell, Clerk, 27, Friar-lane, Leicester	do.
161 Lineal Feet of c.i. Tube	G.N.R. Co. (Ireland)	W. H. Mills, Engineer, Amiens-street Terminus, Dublin	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
New Tramways	Glasgow Corporation	J. Young, 88, Renfield-street, Glasgow	Mar. 21
Brick Culvert and Relative Works	Paisley Town Council	J. Lee, C.E., Master of Works, 13, Gilmour-street, Paisley	do.
Ten Tons of Galvanised Corrugated Steel Sheets	Dundee Harbour Trustees	J. Thompson, Harbour Engineer, Dundee	do.
House in Cranford-avenue, Exmouth	Mr. G. F. Perriam	E. E. Ellis, Architect, Exmouth	do.
Alterations to Premises, Budleigh Salterton	Mr. W. F. Haymes	do.	do.
*Painting, Repairs, etc., North Dispensary	St. Marylebone Guardians	A. Saxon Snell 22, Southampton-buildings, Chancery-lane, W.C.	do.
Police Station at Thorne, near Doncaster	West Riding County Council	J. Vickers Edwards, County Architect Wakefield	do.
Street Works, Albert-road, Pontypridd	Pontypridd U.D.C.	P. R. A. Willoughby, A.M.Inst.C.E., Dist. Cl. Offices, Pontypridd	do.
Kerbs and Paving Setts	Cowes U.D.C.	J. W. Webster, Surveyor, High-street, Cowes, I.W.	do.
One-Horse Emergency Telescopic Tower Wagon	Bootle Corporation	Borough Electrical Engineer, Pine-grove, Bootle	do.
Roadworks, Bengeo, Hertford	W. F. Parker	Norris & Duval, 60, Fore-street, Hertford	do.
*Painting, etc., at Rackham-street Infirmary	St. Marylebone Guardians	Steward of the Infirmary, Rackham-street, Notting Hill, W.	do.
Twenty-eight Workmen's Dwellings, Newbridge	Abercarn U.D.C.	J. Williams, Engineer, Council Offices, Abercarn	Mar. 22
Roads, Newbridge	do.	do.	do.
Materials	Darlington Corporation	G. Winter, Borough Surveyor, Town Hall, Darlington	do.
30-ton Electric Jib Crane, Greenwich Electricity Sta.	L.C.C.	County Hall, Spring-gardens, S.W.	do.
Fire Alarms and Telephones, Leavesden Asy., Watford	Metropolitan Asylums Board	W. T. Hatch, Eng., Office of the Bd., The Emb'km't, London, E.C.	do.
Railing round Queen Victoria Statue, Piccadilly	Manchester Corporation	City Architect, Town Hall, Manchester	do.
Clean.& Paint.Chpls,L'ges,etc.,L'ds & Huns.C'm'teries	Leeds Corporation	City Engineer's Office, Leeds	do.
230 Cast-iron Tree Gratings	Bootle Corporation	Borough Engineer, Town Hall, Bootle	do.
Road Works, etc., Salisbury-road, etc.	Wealdstone U.D.C.	H. Walker, C.E., Council Offices, Wealdstone	do.
Isolation Stables, Low Hall Farm	Walthamstow U.D.C.	G. W. Holmes, A.M.Inst.C.E., Town Hall, Walthamstow	do.
*Roadmaking and Paving Works	Willesden District Council	Council's Engineer, Dyne-road, Kilburn, N.W.	do.
Materials	Hoo R.D.C.	R. P. Smyth, Clerk to Council, Strood	Mar. 23
Cement	Cheltenham Borough Council	J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham	do.
Sewage Pumping Machinery, etc.	Twickenham U.D.C.	F. W. Pearce, Surveyor, Town Hall, Twickenham	do.
Boilers and House Refuse Destructor	do.	do.	do.
380 Yards of 9-in. Drain Pipes, etc.	Hanley, Stoke, & Fenton Hos. Board	E. Jones, Architect to Board, Albion-street, Hanley	do.
Furniture, etc., New Asylum, Hollymoor, Birmingham	Lunatic Asylums Com. of Visitors	W. Hutton, Clerk, Council House, Birmingham	do.
Bank, Kirkby Stephen	Bank of Liverpool, Ltd.	J. F. Curwen, F.R.I.B.A., 26, High-gate, Kendal	do.
Annual Contracts	Bredbury and Romiley U.D.C.	Surveyor, School Brow, Bredbury	do.
A Coaling Stage and Carriage Works, Heaton	North-Eastern Railway	W. Bell, Architect, Central Station, Newcastle-on-Tyne	do.
Work and Material	Holborn Borough Council	H. C. Jones, Town Clerk, 197, High Holborn, W.C.	do.
Sewer Work	do.	do.	do
*New Sewers, etc.	do.	Borough Surveyor, 197, High Holborn, W.C.	do.
*New Infirmary, etc., at Workhouse	Chipping Norton Union	C. Smith & Sons, 164, Friar-street, Reading	do.
Hot-Water Heating Apparatus, Town Hall, Devizes	Devizes Town Council	Borough Surveyor's Office, Devizes	Mar. 24
Masonry Bridge at Clodock over the Monnow	Dore R.D.C.	T. Llanwarne, Clerk, St. John-street, Hereford	Mar. 25
Rails and Car Shed	Keighley Corporation	Borough Engineer, Town Hall, Keighley	do.
Overhead Equipment, Cars, Cables, etc.	do.	Borough Electrical Engineer, Corp. Electricity Wks, Keighley	do.
*New Coastguard Buildings, near Plymouth	Admiralty	Director of Works Department, 21, Northumberland-avenue, W.C.	do.
*Two New Wings, etc., to Infirmary	Halstead Union	Clare & Ross, M.S.A., West-street, Finsbury-circus, E.C.	do.
*Sewer, Porchester-gardens	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.	Mar. 26
Granite	Ramsey U.D.C.	F. R. Serjeant, Clerk, Ramsey	do.
Public Library, Drogheda	Drogheda Library Committee	Town Clerk's Office, Court House, Drogheda	Mar. 28
House, Goxhill	.....	H. C. Scaping, Architect, Grimsby	do.
Making-up Private Streets	York Corporation	A. Creer, City Engineer, Guildhall, York	do.
Covered Ways	Tramways Committee, Colchester	H. Goodyear, Borough Engineer, Colchester	do.
Steelw'k for Renewal of Under-Bridges, Esk Via., etc.	Caledonian Railway Company	Divisional Engineer, Princes-street Station, Edinburgh	do.
Road and Sewer Work, Coniston-road, Muswell Hill	Hornsey Town Council	F. J. Lovegrove, Borough Engineer, Southwood-lane, Highgate, N.	do.
Road-making, Dorking	U.D.C.	G. S. Mathews, Town Surveyor	do.
*Precipitating Tanks, etc., at Irrigation Land	Barnet U.D.C.	Council's Surveyor, 40, High-street, Barnet	do.
*Making up Coniston-road, Muswell Hill	Borough of Hornsey	Boro' Engineer, Municipal Offices, Southwood-lane, Highgate, N.	do.
3,000 Yards of Sewers and Surface Water Drains	Chepping Wycombe Corporation	T. J. Rushbrooke, Boro' Surveyor, 77, Easton-st., High Wycombe	Mar. 29
Waterworks and Reservoir, Biggleswade	Biggleswade Water Board	G. F. Deacon, Engineer, 16, Great George-street, Westminster	do.
Laying 2,900 Tons of Pipes, and Constructing Tanks.	Biggleswade R.D.C.	do.	do.
Laying 260 Tons of Pipes, etc.	Biggleswade U.D.C.	do.	do.
*Extension of Telegraph Factory, Holloway	H.M. Works	H.M. Office of Works, Storey's-gate, S.W.	do.
*New Post Office, Hull	do.	do.	do.
Stationmaster's Ho. & Sta. Bldgs., Neill's Hill, Belfast	Belfast and County Down Ry. Co.	The Engineer, Queen's Quay Terminus, Belfast	do.
*Repairs and Painting, Public Baths and Washhouses	Islington Borough Council	Borough Engineer, Town Hall, Upper-street, N.	do.
*Three Cottages at Knowle Asylum, Fareham	Co. of S'th'mpt'n Asylum Vis. Com.	County Surveyor, The Castle, Winchester	do.
*New Coastguard Detachment, near Pembroke	Admiralty	Director of Works Dept., 21, Northumberland-avenue, W.C.	do.
Permanent Way and Overhead Equipment	Wandsworth U.D.C.	H. Ward, Clerk, The Council House, Handsworth, near Birmingham	Mar. 30
*Coronation Memorial	.....	Council Offices, Ewell-road, Surbiton	do.
Chapel Maenclochog, Pembroke	.....	D. E. Thomas, Architect, Victoria-place, Haverfordwest	do.
Clock Tower, Surbiton	Coronation Memorial Committee	J. Johnson, Architect, 9, Queen Victoria-street, E.C.	do.
Fire-Clay Goods	Tipton U.D.C.	S. O. Stephenson, Engineer, Gasworks, Tipton	Mar. 31
Tubes, etc.	do.	do.	do.
Indiarubber-covered Cables	Sunderland Corporation	J. F. C. Snell, M.Inst.C.E., Town Hall, Sunderland	do.
Materials	Normanton U.D.C.	A. Hartley, Architect, Castleford	do.
House and Offices, Rossett	Denbighshire County Council	R. Lloyd Williams, County Surveyor, Denbigh	do.
*Sewerage and Sewage Disposal Works	Chailey R.D.C.	Powell & Co., Estate Offices, Lewes	do.
Drainage Scheme, Amman Valley	Llandilo Fawr R.D.C.	E. Jones, Surveyor to Council, Glancennan, Llandilo	April 23
Rebuilding Renwick Wesleyan Chapel	.....	H. Higginson, Architect, 3, Lonsdale-street, Carlisle	No date
Repainting Poles and Fittings of Tramway System	.....	Tramways Manager, 1, Warwick-road, Carlisle	do.
Ten Cottages, Hereford	.....	W. W. Robinson, Architect, Hereford	do.
Forty-four Dwelling-houses, Stamford-rd., Andenshaw	.....	Burton & Percival, Arch's., 150A, Stamford-st., Ashton-under-Lyne	do.
Conversion of Wellington-chams., Leeds, into Shops, etc.	Trustees of the late H. M. Sykes	Messrs. Mosley, Rent Collectors, Wormald-row, Leeds	do.
Wesleyan Ch., and School Enlargement, Lowmoor	.....	W. J. Morley & Son, Architects, 269, Swan-arcade, Bradford	do.
Painting, etc., Elec. Lt., etc., New Briggate Synagogue	.....	Max Abrahamson, President, Byron-st. Mills, North-st., Leeds	do.
*Extension of Blacklead and Blue Mills, Kent-st., Hull	.....	T. Brownlow Thompson, Architect, 15, Parliament-street, Hull	do.
*Making Roadway, Edmonton	Messrs. Eley Bros., Ltd.	Works Superintendent, Eley Bros., Ltd., Edmonton	do.
*New Buildings for "Dundee Courier"	.....	Niven and Wigglesworth, 104, High Holborn, W.C.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*Building Inspector	Croydon R.D.C.	150*l.*	Mar. 17
*Clerk of Works	M.A.B.	4*l.* 4s. per week	Mar. 22
*Assistant Surveyor	County Borough of Croydon	150*l.* per annum	Mar. 26
*Clerk of Works	Chorlton, etc., Joint Asylum Com.	4*l.* 4s. per week	April 6
*Assistant Examiner in Office of H.M. Works, etc.	Civil Service Commission	Not stated	April 14
*Quantity Surveyor	Lambeth Borough Council	Not stated	No date.

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, xvii.

TENDERS—*Continued from page 297.*

NEATH—*Continued.*

Contract No. 2 (Purchase of Old Materials).

Goodridge & Son, Neath*	£284	Williams Bros.	£228
Bennett Bros.	251	Gilbert Thompson & Co.	216

Contract No. 3 (Steel and Iron Work).

Finch & Co.	£6529	Hundyside & Co.	£5,238
Baker & Co.	6,300	Rees & Kirby	4,998
Heenan & Froude	6,200	Wood & Co.	4,990
Stevenson & Co.	6,138	Bryden & Middleton	4,900
Sands & Son	6,085	Goodridge & Son	4,880
Braby & Co.	5,945	W. H. Creighton	4,782
Rowell & Co.	5,912	A. D. Dawnay	4,781
Bennett Bros.	5,887	Boulton & Pane	4,707
Bruce & Stile	5,819	G. Thompson & Co.	4,544
Henry Parfitt	5,688	G. B. Smith & Co., Glasgow*	4,500
John Lysaght, Ltd.	5,423		

NEWBURGH.—For two cast-iron pressure filters and 2,500 lineal yards of c.i. pipes, etc., for Newburgh Town Council. Messrs. W. D. Sang & Lockhart, C.E., Kirkcaldy :—

R. & J. Gilhooly	£1,296 7 6	R. C. Brebner & Co.	£627 3 9
J. L. Wilson	1,277 3 8	Jas. Strachan & Son	624 2 1
James Walker	913 8 4	Alex. Fraser	614 0 0
Alex. Gordon	812 10 0	David Gilman	588 15 0
John Kennedy	809 9 1	Macleish, Morrison, & Co., Ltd.	570 9 0
G. Mackay & Son	723 7 8	Frew, Watson, & Co., Ltd., Millstreet, Perth*	568 10 4
John Easton	680 12 8		
Alex. Mitchell	676 14 1		
H. Hutchison	651 14 2		
J. & D. Ross	643 0 0		
Isaac Craik	635 16 8		

NORWICH.—For the erection of a public convenience at Waterlow Park, for the City Corporation. Mr. A. E. Collins, City Engineer, Guildhall, Norwich. Quantities by City Engineer :—

W. J. Hannant	£214 1 6	A. C. Taylor	£185 0 0
Thomas Gill	209 0 0	A. D. Boddy & Son	184 0 0
George Pegg	199 11 0	A. S. Lincoln‡	175 0 0
J. S. Smith	192 0 0		
J. J. Howes	189 18 0		

[All of Norwich.]

[City Engineer's estimate, £180.]

‡ Recommended for acceptance.

RHYMNEY (Wales).—For erection of stables, cart-sheds, fire brigade station, workshops, etc., for the Urban District Council. Mr. W. Lloyd Marks, Surveyor, 61, High-street, Rhymney :—

D. J. Roberts	£637 10	D. John Vaughan, Builder, Tredegar, Mon.*	£593 0
Evan Evans	619 10		
Tom Jones	595 0		

RIPLEY (Derbyshire).—For 428 yards of drain pipes, 9 in. diameter, for the Urban District Council. Mr. C. W. Thompson, Surveyor, Town Hall, Ripley :—

J. Hawley & Son	£350 15 0	G. M. Kerry	£268 3 0
J. Hutchinson & Son	320 0 0	H. Ashley	265 0 0
Pegg & Bailey	317 0 0	Belshaw & Son	236 0 0
C. E. Cox	295 14 6	H. Bennett, Mansfield*	219 2 0
W. Clower	285 0 0		

[Surveyor's estimate, £220.]

ROCH (Pembrokeshire).—For vestry and other additions to St. Mary's Church, Roch. Mr. D. E. Thomas, architect, Victoria-place, Haverfordwest :—

W. Roberts	£126 13 5
J. Williams, Roch, Haverfordwest*	125 15 4

SANDAL.—For about eighty tons of 6 in. c.i. pipes, etc., for the Urban District Council. Mr. F. Massie, A.M.Inst.C.E., Tetley House, Wakefield :—

J. Oakes & Co.	£466 4 6	Cochrane & Co., Ltd.	£403 8 9
D. Parsons & Sons	463 2 9	Stanton Ironworks Co.	394 1 0
Cochrane & Co.	460 10 2	J. & R. Ritchie	390 7 0
E. & W. H. Haley	432 16 6	Sheepbridge Coal & Iron Co., Ltd.	388 14 2
J. Oakes & Co.	422 12 2	Staveley Coal & Iron Co., Ltd., near Chesterfield*	384 16 6
A. G. Cloake	420 10 7	Clay Cross Co.	383 1 2
Holwell Iron Co.	417 9 8		
J. Needham & Sons	414 11 1		
Biggs, Wall, & Co.	408 8 9		
Birtley Iron Co.	407 11 6		

SELSTON (Nottinghamshire).—For sewerage and sewage disposal works. Messrs. Sands & Walker & Maylan, joint engineers, Milton-chambers, Nottingham :—

Morley & Son	£26,337	H. Ashley	£22,899
G. Braithwaite	25,275	F. W. Trimm	22,635
J. Jackson	25,784	Johnson & Langley	21,257
J. F. Price	25,770	C. M. Kerry & Co.	21,200
J. Hawley & Son	24,994	Cope & Rayner, Nottingham	20,524
J. S. Dawson	24,448	J. Lane‡	16,225
Barker Bros.	24,332		
J. Hodson & Son	24,183		

‡ Withdrawn.

SPILSBY (Lincs.).—For supply of 6,000 tons of broken granite, 7,500 tons of broken slag, and 600 tons of chips or gravel, for the Rural District Council. Mr. T. A. Busbridge, C.E., Spilsby :—

	Average Price per Ton for 1½-in. Material. s. d.
Granite.	
M. Jackson (Quenast Granite) Louth*	12 0
Robinson Bros. (Brandon Hill Granite) Spilsby*	13 3
Mountsorrel Granite Co., Mountsorrel*	12 0
Groby Granite Co., Groby*	12 1
Grimley & Co. (Cliffe Hill Granite), Sutton Bridge*	12 7
Forest Rock Granite Co., Ltd., Whitwick*	12 0
London Basalt Stone Co., Ltd. (Basalt Stone) London*	12 9
Fergusson & Starkey, Leicester*	12 3
Whitwick Granite Co. (Best quality), Whitwick*	12 2
L. Roper (Enderby and Stoney Stanton Granite), Boston*	12 0
Slag.	
Islip Iron Co., Ltd., Thrapston*	7 11
Grimley & Co. (Best Kettering Slag), Sutton Bridge*	8 7
Ellis & Everard, Ltd., Tallington*	8 4
W. Prestwick (Wellingborough Slag), Dronfield*	8 9

SWANAGE.—For making-up Burlington-road, for the Urban District Council. Mr. John Sidney Senior, Surveyor :—

W. M. Flardy	£415	John Parsons	£345
Francis Stevens	390		

[All of Swanage.]

STRATFORD. — For additions and alterations to Bleak House and Magnolia House, Stratford, for Messrs. C. Boardman & Sons. Messrs. George Baines and R. Palmer Baines, architects, 5, Clement's-inn, Strand, London, W.C. :—

Mattock Bros.	£1,236	Sands, Palmer, & Co.	£1,050
F. J. Coxhead	1,193	Battley, Sons, & Holness, Clifton Works, 21, Old Kent-road, S.E.*	1,047
F. Gough & Co.	1,184		
Geo. J. Hosking	1,127		
Charles North	1,087		

STRATFORD-ON-AVON.—For the erection of a detached villa in the Avenue-road, for Mrs. F. H. Hastings. Mr. E. G. Holtom, architect, 58, Henley-street, Stratford :—

Wm. Linaman, jun.	£1,397	Jno. Harris & Son	£1,040
J. G. Fincher & Co.	1,200	E. J. Kennard, Stratford-on-Avon*	966
G. Euston	1,076		
J. Ward & Co.	1,050	John Roberts	869

TARBERT.—For the construction at Balamenach, West Loch, Tarbert, of two filters and a service tank, and for pipes, etc., for the Tarbert Water Committee. Messrs. Warren & Stuart, engineers, 94, Hope-street, Glasgow :—

Thomas Christie, contractor, Stirling*	£1,891 9 4

TILEHURST (Berks).—For the erection of an infectious diseases hospital, Prospect-park, Tilehurst, for the Reading Borough Council. Messrs. C. Smith & Son, architects, 164, Friar-street, Reading :—

		Time. Weeks.
J. Harris	£21,097 0 0	68
Holliday & Greenwood, Ltd.	21,077 0 0	44
W. Hawkins	20,910 0 0	—
E. C. Hughes	20,863 13 10	—
Spear & King	20,735 3 0	60
S. Roberts	20,612 12 2	60
H. Godwin	20,582 16 10	90
G. Pilgrim	20,579 0 0	78
J. Norris & Sons	20,425 0 0	60
J. Cracknell	20,319 2 0	56
H. Flint	20,239 0 0	78
G. S. Lewis & Bro.	19,915 0 0	65
J. H. Vickers, Ltd.	19,878 0 0	95
McCarthy E. Fitt	19,767 0 0	66
C. H Hunt & Son	19,505 0 0	40
Collier & Catley, Ltd., Reading*	18,824 3 0	78
A. Faulks	18,671 0 0	40
J. Dallow & Sons	18,580 0 0	65
A. J. Colborne	18,481 9 10	60
F. Newberry	18,399 0 0	60

WALSALL.—For extension of boiler house of generating station in Wolverhampton-street, for the Corporation. Mr. A. Wyllie, Borough Electrical Engineer, Wolverhampton-street, Walsall :—

T. Tildesley, Willenhall	£777

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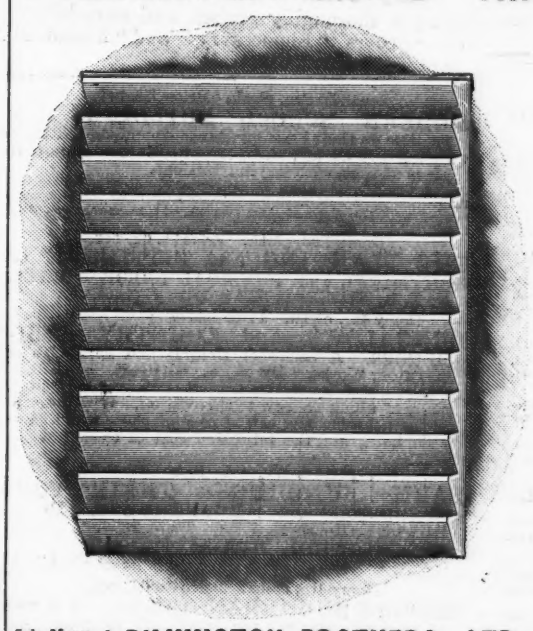

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Summary of the Report presented at the Fifty-fifth Annual Meeting, held on 3rd March, 1904.

ORDINARY BRANCH.—The number of Policies issued during the year was 74,358, assuring the sum of £7,396,050, and producing a New Annual Premium Income of £396,780.

The Premiums received during the year were £3,814,856, being an increase of £163,398 over the year 1902.

The Claims of the year amounted to £1,523,686. The number of Deaths was 6,611, and 5,685 Endowment Assurances matured.

The number of Policies in force at the end of the year was 712,097.

INDUSTRIAL BRANCH. — The Premiums received during the year were £5,846,554, being an increase of £155,647.

The Claims of the year amounted to £2,100,824. The number of Deaths was 210,839, and 3,246 Endowment Assurances matured.

The number of Free Policies granted during the year to those Policy-holders of five years' standing who desired to discontinue their payments was 95,938 the number in force being 912,984. The number of Free Policies which became Claims during the year was 19,788.

The total number of Policies in force at the end of the year was 15,200,390; their average duration exceeds ten and a quarter years.

The Assets of the Company, in both branches, as shown in the Balance Sheet, are £51,217,377, being an increase of £4,062,176 over those of 1902.

The Staff Provident Fund, which was founded in 1898 for the benefit of the outdoor staff, shows a satisfactory increase for the year, the total amount standing to the credit of the Fund being £127,077.

Messrs. Deloitte, Dever, Griffiths & Co. have examined the Securites, and their certificate is appended to the Balance Sheets.

FREDERICK SCHOOLING, *Actuary.*

D. W. STABLE, *Secretary.*

THOS. C. DEWEY, WILLIAM HUGHES, } *Joint General Managers.*

The full Report and Balance Sheet can be obtained upon application.

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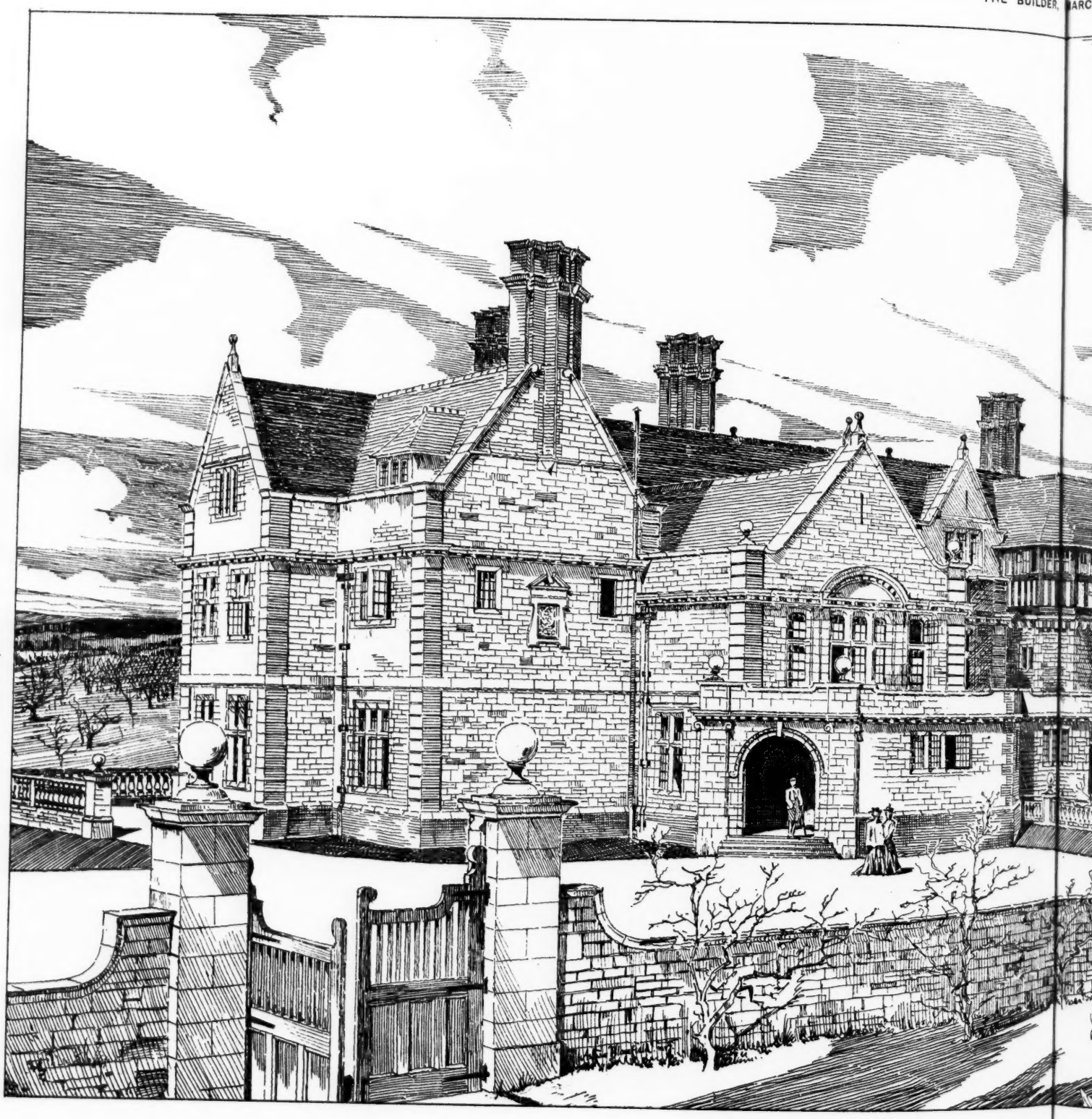

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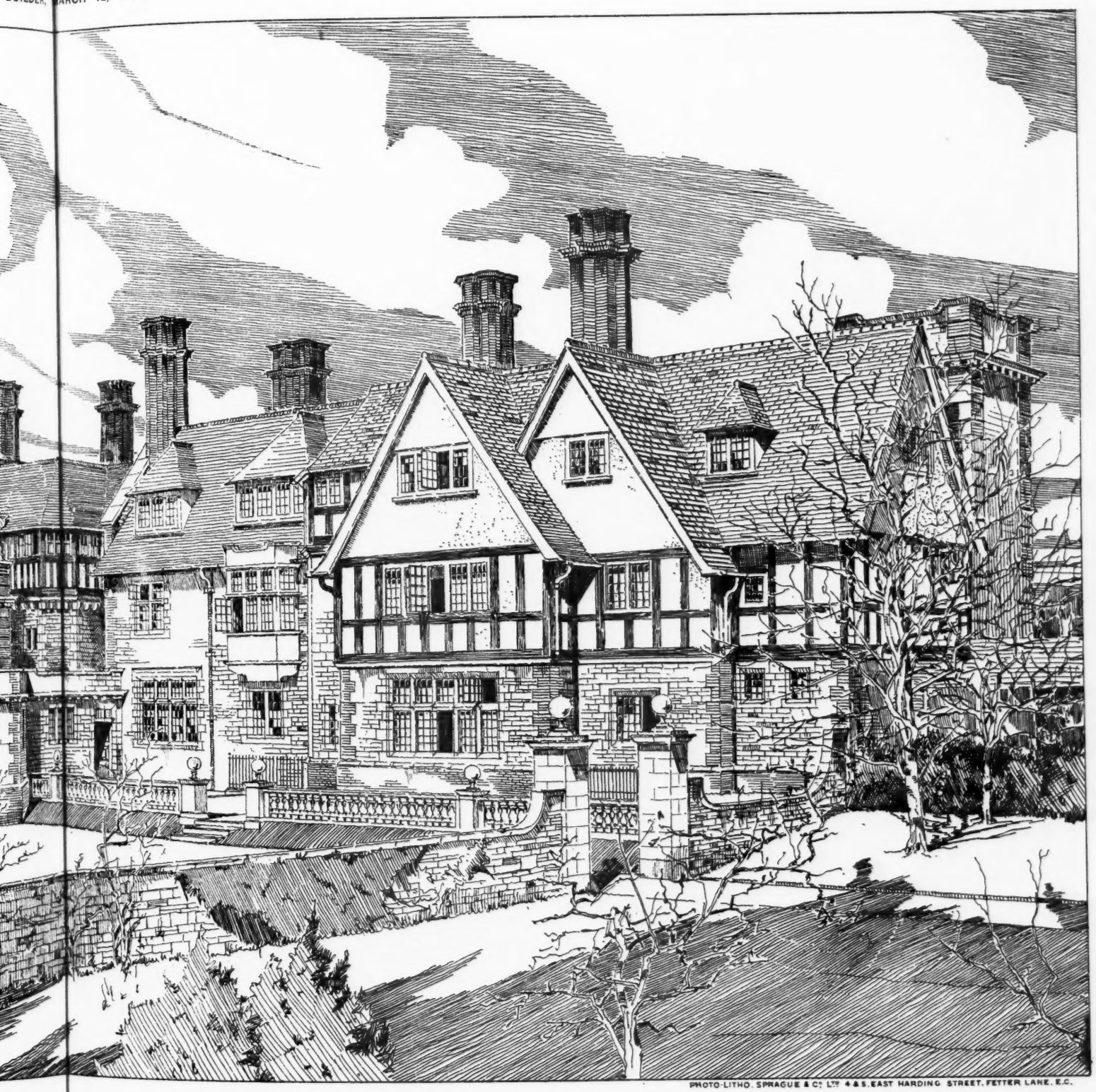

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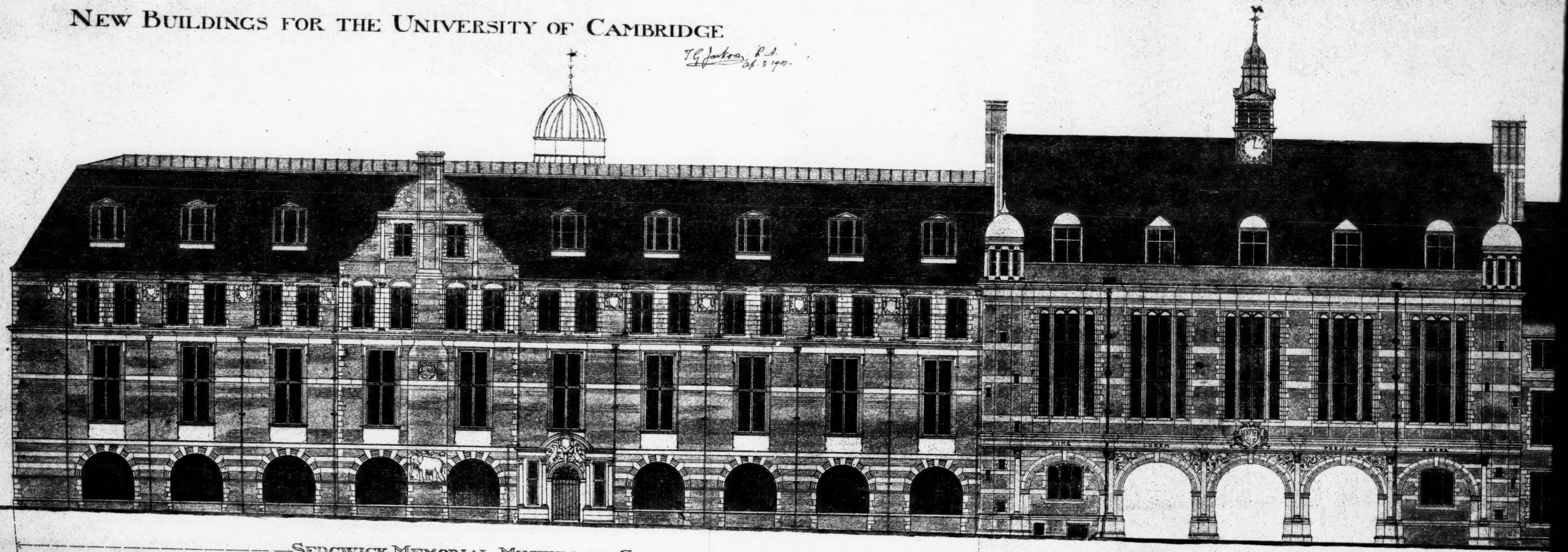

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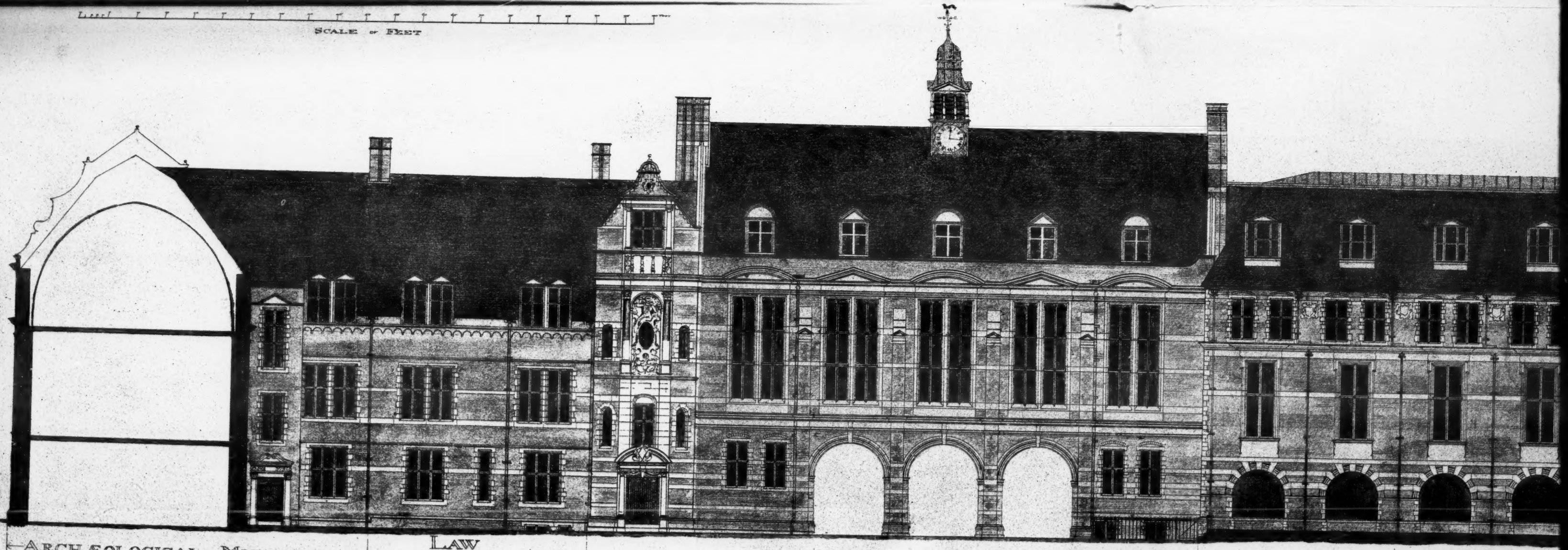

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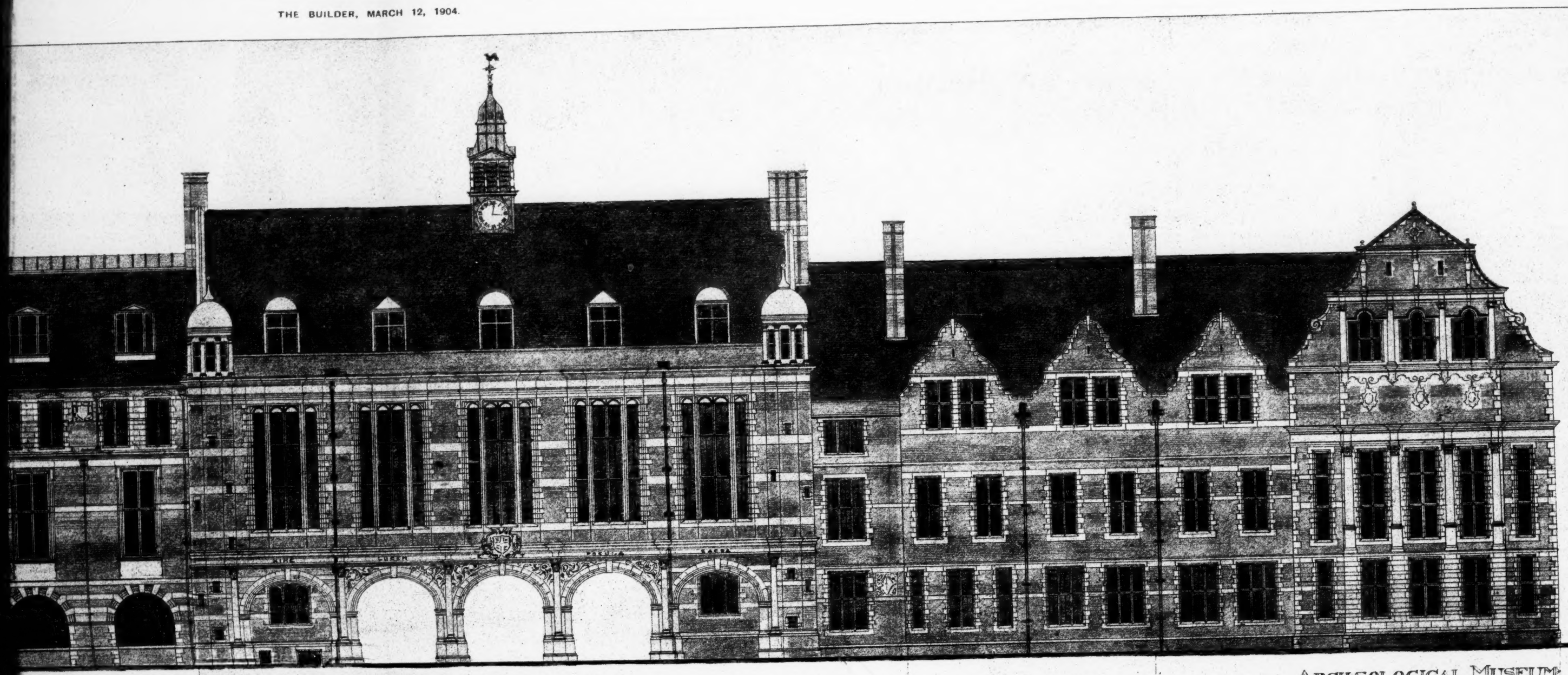

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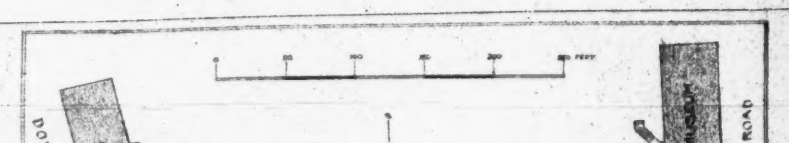

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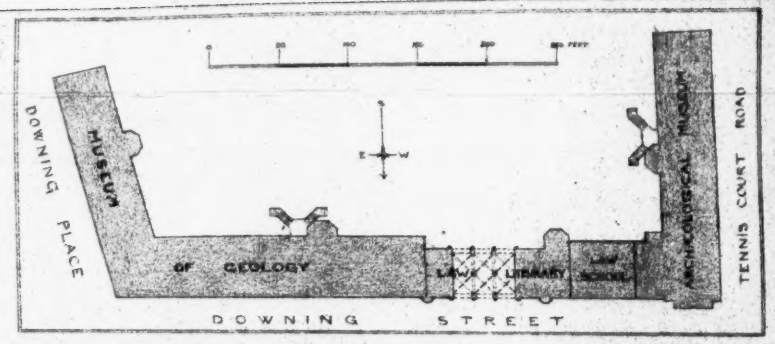

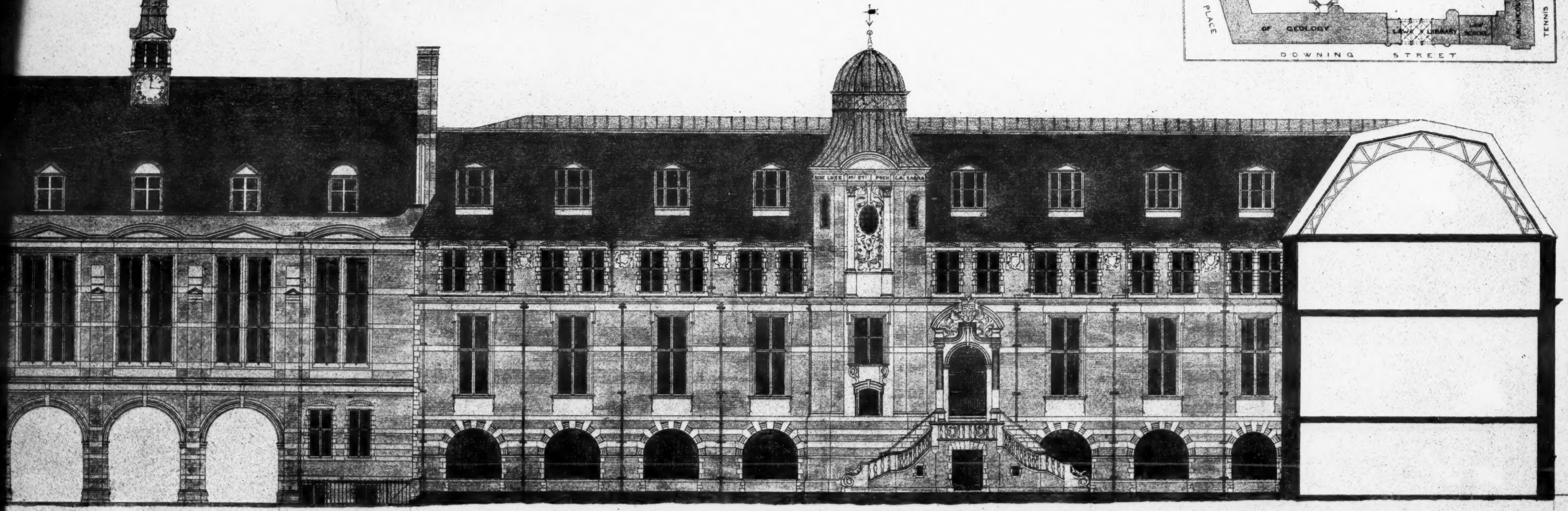

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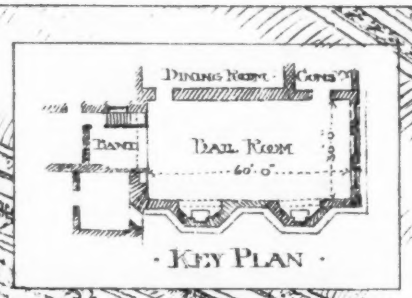

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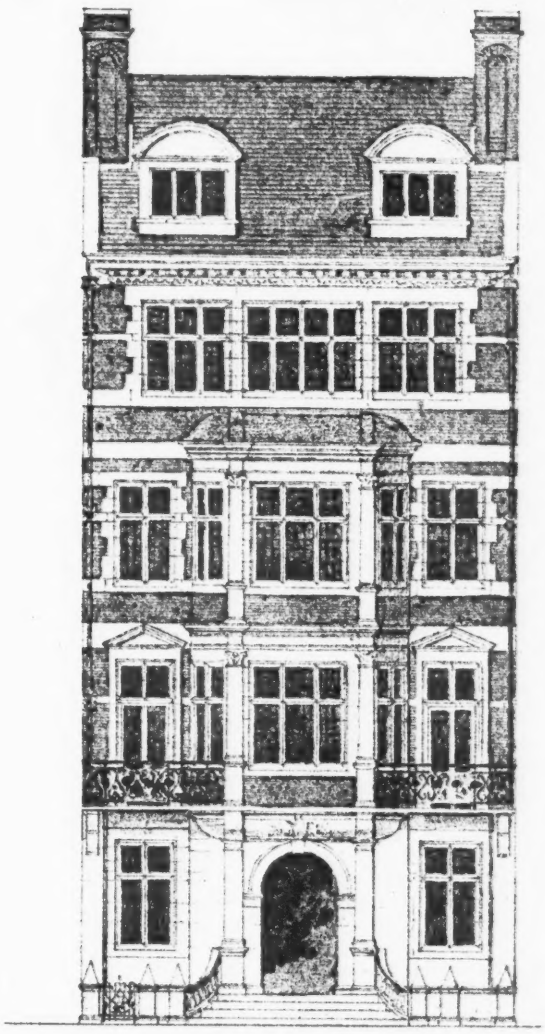

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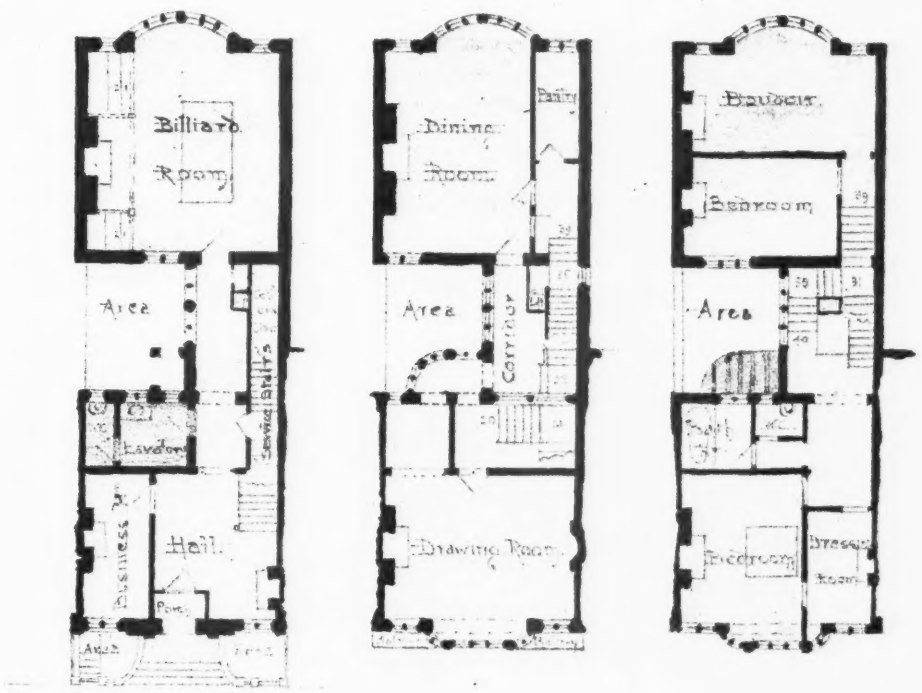

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